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PATENTS FOR INVENTIONS.

ABRIDGMENTS

OF

Specifications

RELATING TO

TEA, COFFEE, CHICORY, CHOCOLATE, COCOA, &c.

(COMPRISING THEIR MANUFACTURE, BUT NOT THE PREPARATION OF DRINKS THEREFROM).

A.D. 1704–1866.

PRINTED BY ORDER OF THE COMMISSIONERS OF PATENTS.

LONDON:
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PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY.
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25, SOUTHAMPTON BUILDINGS, HOLBORN.

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PREFACE.

THE Indexes to Patents are now so numerous and costly as to render their purchase inconvenient to a large number of inventors and others, to whom they have become indispensable.

To obviate this difficulty, short abstracts or abridgments of the Specifications of Patents under each head of invention have been prepared for publication separately, and so arranged as to form at once a Chronological, Alphabetical, Subject-matter, and Reference Index to the class to which they relate. As these publications do not supersede the necessity for consulting the Specifications, the prices at which the printed copies of the latter are sold have been added.

The number of Specifications from the earliest period to the end of the year 1866 amounts to 59,222. A large proportion of the Specifications enrolled under the old law, previous to 1852, embrace several distinct inventions, and many of those filed under the new law of 1852 indicate various applications of the single invention to which the Patent is limited. Considering therefore the large number of inventions and applications of inventions to be separately dealt with, it cannot be doubted that several properly belonging to the group which forms the subject of this volume have been overlooked. In the progress of the whole work such omissions will from time to time become apparent and be supplied in future editions.

This volume contains Abridgments of Specifications to the end of the year 1866. It is intended to continue them to the end of the year 1876 as soon as the Abridgments of all the Specifications from the earliest period to the end of 1866 have appeared in a classified form. Until that takes place, the inventor can continue his examination of the Specifications relating to the subject of his search by the aid of the Subject-matter Index for each year.

This volume comprises the various processes relating to the manufacture of tea, coffee, chocolate, cocoa, and their substitutes, beginning at the period after the plucking of the leaf or fruit, and stopping short at the preparation of drinks therefrom. Thus concentrated extracts, infusions, or decoctions of tea, &c., either alone or in combination with concentrated milk, will be found in this series, but potable or unconcentrated extracts must be looked for in the series entitled "Unfer-"mented Beverages, Aerated Liquids, Mineral Waters, &c." Measuring tea will be included in a volume not yet published.

H. READER LACK.

May, 1877.

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TEA, COFFEE, CHICORY, CHOCOLATE, COCOA, &c.

(COMPRISING THEIR MANUFACTURE, BUT NOT THE PREPARATION OF DRINKS THEREFROM).

A.D. 1704, December 22.—No. 373.

BULL, Richard.—"A new way of roasting coffee berries."

[No Specification enrolled. Letters Patent printed, price 4*d.*]

A.D. 1725, February 10.—No. 474.

WORKMAN, James.—"A machine not hitherto made use of, "wherewith to make chocolate."

[No Specification enrolled. Letters Patent printed, 4*d.*]

A.D. 1730, January 24.—No. 514.

CHURCHMAN, Walter.—"Expeditious, fine, and clean "making of chocolate by an engine." This engine works cocoa nuts into chocolate "by and with wood, stones, and "iron, whose respective figures and motions are cones, concaves, flatts, and edgeways, chequered and polished with "fanners to be made of wood and cloth, which are to move "horizontally and perpendicularly."

[Printed, 4*d.* No Drawings. *See* Rolls Chapel Reports, 6th Report, p. 118.]

A.D. 1763, November 3.—No. 798.

BILL, William.—"A new machine to make chocolate." A large wooden wheel is worked by horse power, and "a long "tumbling shaft" from the wheel works three small wheels which turn two iron spindles. One of the spindles turns "a "fine culling or French stone" mounted in "a large round "iron cockle;" the other turns an iron roller which revolves in an iron tub. In the bottom of the cockle are "a stone and

" a small charcoal fire," and under the tub is " a slow char-
" coal fire."

" All the above works are fixed in one motion."

[Printed, 4*d*. No Drawings. *See* Rolls Chapel Reports, 6th Report, p. 133.]

A.D. 1771, March 6.—No. 984.

DRING, JOHN.—" New invented manufacture of coffee." The coffee fresh roasted is ground to a fine powder, and is then worked with fresh butter and suet on an iron plate until it acquires the consistence of a thick paste. The plate is kept heated by a gentle fire. One sort is made up of coffee alone; another is flavoured with vanilla, cinnamon, and musk. Both sorts are made into cakes by putting them into tin moulds which have been " first prepared with lucee (Lucca ?) oil."

[Printed, 4*d*. No Drawings.]

A.D. 1775, January 31, No. 1094.

PANTER, WILLIAM.—" A mill for husking of coffee." The principal parts of the apparatus are an upper and a lower mill, a " middle motion," a round screen, and a hopper and fan below the screen.

A " horse wheel " moves a cog wheel which turns a vertical shaft. The shaft carries two rigger wheels; the upper one is connected to the rigger wheel of the upper mill; the lower one to the rigger wheel of the lower mill and to the uppermost pulley of the middle motion. The middle motion is a frame, wherein a vertical spindle revolves carrying four pulleys; the first gives motion to the spindle; the second turns the fan of the lower mill, the third the fan below the screen, and the fourth the screen.

The coffee is put into the hopper of the upper mill and passes thence into a case which covers two stones or equivalents, the lower one being fixed, the upper one turned by the rigger wheel of the mill. The coffee, the husks " being
" rubbed and much broken off," descends into a spout, at the bottom of which is a small hopper, where a fan blows away the loose husks; thence it passes into the lower mill, the case of which encloses a fixed flat stone or equivalent and a brush which is turned round by the rigger wheel of the mill. The coffee next descends into the screen, which clears it from dust,

&c., and thence into the hopper, where the fan " blows and " clears it from the bad, and the good is guided into the hogs- " head."

[Printed, 6*d*. Drawing.]

A.D. 1779, March 22.—No. 1214.

DEARMAN, Richard.—" An entire new method of making " mills for the purpose of grinding malt, wheat, barley, beans, " pease, groats, rice, Indian corn, coffee, pepper, seeds, " druggs, and all kinds of spice." These mills are intended to be used as a substitute for the ordinary steel mills.

To form " the grinding parts," the patentee melts iron and casts it into suitable shape. " In order to file the teeth to a " proper edge," he softens the parts by a gradual heat. After the filing he hardens the grinding parts with bones or charcoal finely ground, or soot mixed with kelp or salt, " laid on with " grounds or lees of malt liquor or other acid or glutinous " matter." Finally he heats the parts in a furnace and plunges them into water.

[Printed, 4*d*. No Drawings. *See* Repertory of Arts, vol. 5, p. 247.]

A.D. 1794, September 29.—No. 2012.

GARRATT, Francis.—" Preparing the cocoa nut with other " ingredients for the purpose of making the same into cocoa, " which I call 'the Queen's cocoa.' " This preparation consists of 112 lbs. of cocoa nut well dried, 113th part of orange peel, 114th part of lemon peel, 115th part of cassia, and 116th part of Peruvian bark, pulverised and well mixed together. The proportions may be varied.

[Printed, 4*d*. No Drawings. *See* Rolls Chapel Reports, 6th Report, p. 188.]

A.D. 1795, May 7.—No. 2048.

FRY, Joseph Storrs.—" Roasting cocoa nuts." In the fireplace described by the patentee, the bars 16 in number are situated about 15 inches from the ground and form a bed 2 feet long by 7 inches wide. The fireplace is then built up on all four sides 16 inches, " spreading each way," so as to measure at the top 2 ft. 2 in. the longest way and 20 inches the narrowest way ; at the top of the back are two flues, each 3 inches square. On the top of the brickwork is fixed a flat cast-iron frame 6 inches wide having a rim which stands up 1½ inches "all round the inner side against the fire." A "semi-"cylindrical cover of rolled iron plate" (with handles for lifting on and off) fits round the rim, so as to admit no air to the fire except through the bars. "A cylindrical roaster of "rolled iron plate," 23 inches long and 17 inches in diameter, is mounted on "two semicircular notches at the middle of "each end of the rim" and is caused to revolve by means of a winch. The cylinder holds about 50 lbs. of cocoa nuts, and the roasting is effected in about three quarters of an hour.

[Printed, 4*d*. No Drawings. *See* Rolls Chapel Reports, 6th Report, p. 189.]

A.D. 1802, August 2.—No. 2639.

WYATT, Charles.—"Improvements in the apparatus for and "mode of distilling, drying coffee and sugar." The mode of drying coffee and sugar consists in exposing cylinders containing these substances to the action of air raised by steam to the necessary degree of heat.

The apparatus is composed of a chamber having at one side near the bottom an entrance for steam and at the opposite side an exit for the steam. Inside the chamber are "cavities "for steam constructed of metal" and one or more revolving cylinders. The chamber is also provided with apertures for the admission and escape of air and with regulators for the admission of air.

The steam in its passage through the cavities warms the air in the chamber, and the coffee, &c. is dried by the revolution of the cylinders in the warmed air.

[Printed, 10*d*. Drawing. *See* Repertory of Arts, vol. 2 (*second series*), p. 9.]

A.D. 1806, November 20.—No. 2989.

HENCKELL, James.—(*A communication.*)—"The method of "making a machine for drying coffee, or barley, or any other "grain, pulse, fruit, seed, and berries." A main shaft, mounted in standards or otherwise and carrying "wheels, circles, and "arms placed thereon," is caused to revolve by hand or other power. Connected to the wheels, &c. are barrels or cages which contain the coffee, &c. to be dried; they are provided with apertures or valves for the escape of any vapour that may arise during the process of drying, and there may be inside pieces of wire or network or other appliances to prevent the particles of the substances being dried "from cohering." If required, the apparatus may be so constructed that "a "double motion" may be given to the barrels or to some of them, "one with the main axis and another round their own." A stove or other means of creating heat gives to the apartment containing the apparatus the required temperature. There may be in the apartment shelves or troughs (inclined or not) whereon the substances may be laid before they are put into the barrels. The barrels may be constructed to "operate as "sieves;" and the invention admits of many varieties of detail.

[Printed, 4*d.* No Drawings. *See* Rolls Chapel Reports, 7th Report, p. 196.]

A.D. 1811, September 9.—No. 3480.

ROCHFORT, Walter.—"An improved method of preparing "coffee." The coffee is roasted, and whilst it is hot or warm "and the oil will bind," it is ground as quickly as possible and is then immediately compressed into a solid body so as to expel the air as much as possible; it is then pressed into tin boxes or earthenware vessels and kept covered close down until wanted for use.

[Printed, 4*d.* No Drawings. *See* Repertory of Arts, vol. 20 (*second series*), p. 19; Rolls Chapel Reports, 8th Report p. 85.]

A.D. 1812, June 25.—No. 3577.

SCHICK, Anthony.—"Method or process of roasting coffee."

[No Specification enrolled.]

A.D. 1815, May 23, No. 3916.

KENRICK, Archibald.—"Improvements in the mills used for "grinding coffee, malt, and other articles." The improvements relate to such mills as act "by a revolving conical "cutter having oblique teeth cut upon its external surface" and moving within a stationary case, which is cut with oblique teeth upon its inner surface.

The first improvement consists in forming a flange or flat surface projecting from the end of the case, so that the mill may be screwed or nailed to a wall, table, or other like support. The flange is perpendicular to the spindle of the cutter. Or the mill may be supported on a stem or pillar "formed of the same solid piece of metal" as the case, and the flange (then parallel to the spindle) will be fixed to the bottom of the stem or pillar.

The second improvement relates to box mills, and consists in forming a socket at the upper side of the case for the support of the spindle of the cutter.

The third consists in the use of a "regulating screw;" its point "bears against the large end of the cutter and regulates "the fineness to which the mill will grind by making the "cutter to enter more or less" into the case. In box mills this screw passes through the lowest end of the case.

The fourth relates to "the small end" of the case, "which "contains the socket or collar for the support of the pivot at "the small end of the cutter;" this end "is formed in one "piece with" the case.

[Printed, 6*d*. Drawing. *See* Repertory of Arts, vol. 38 (*second series*), p. 4; Rolls Chapel Reports, 8th Report, p. 110.

A.D. 1824, February 28.—No. 4907.

EVANS, RICHARD.—"A method or process of roasting or pre- "paring coffee and other vegetable substances, with improve- "ments in the machinery employed, such process and "machinery being likewise applicable to the drying, distil- "lation, and decomposition of other mineral, vegetable, and "animal substances, together with a method of examining "and regulating the process whilst such substances are "exposed to the operations before mentioned." By means of his apparatus the patentee abstracts "the aqueous and acidu- "lous particles from coffee without volatilizing the essential "or other oils contained or formed therein."

The apparatus consists of a brick furnace, a cylindrical or other shaped vessel (called the roaster), turning on axes which rest on bearings at each side of the brickwork, a hinged cover which shuts down over the roaster and prevents the escape of heat, and a standard at a certain distance from the furnace. The roaster has a trap-door for charging and emptying, and inside it are the ordinary ledge and "two diagonally placed "ledges;" the latter (claimed as an improvement) "disturb "the coffee much more effectually." The axes are hollow; they do not pass through the roaster; the longer one extends into it "about two thirds of its length," is perforated with small holes, and is "closed at the inner end;" it "serves as a "chimney to carry off the steam." Through the shorter axis slides a tube through which slides a rod having "a cavity at "one end and a handle at the other;" the patentee calls this rod "an examiner," as by drawing it out with the cavity upwards (and therefore full of coffee) the progress of roasting can be seen without stopping the rotation. The roaster revolves by means of wheelwork.

When the aqueous and acidulous particles have been evaporated, the perforations are closed by thrusting in the sliding tube; when the examiner shows that the coffee is of a proper colour, the roaster is raised and turned over so that one axis comes exactly into the bearing on the upper part of the standard; and the roaster "is to be kept rotating (tho' off the fire) "till the coffee is emptied into a vessel," from which it is to be conveyed to a "proper place to be cooled."

[Printed, 6*d*. Drawing. *See* Repertory of Arts, vol. 2 (*third series*), p. 354; London Journal (*Newton's*), vol. 9, p. 72; Register of Arts and Sciences, vol. 2, p. 1; also vol. 3, p. 106; Engineers' and Mechanics' Encyclopædia, vol. 1, pp. 66, 383.]

A.D. 1829, December 10.—No. 5876.

MARSHALL, John.—"A method of preparing or making an "extract from cocoa, which he denominates Marshall's extract "of cocoa." About 1 lb. of ground cocoa nuts is boiled in about 1 gallon of water for about 1 hour; the whole is then strained through a sieve; the oil is then skimmed off, and the liquid is put into a bath "generally known by the name of a "chemical water bath." Evaporation is allowed to proceed until the liquid becomes of "the consistency of treacle or "something near it," and during the evaporation an occasional or continual stirring or motion should be kept up. The preparation is then ready for bottling and corking up from the air, and "it will be fit for use on the following or any subse"quent day."

[Printed, 4*d*. No Drawings. *See* Repertory of Arts, vol. 9 (*third series*), p. 230; London Journal (*Newton's*), vol. 5 (*second series*), p. 336; Register of Arts and Sciences, vol. 4 (*new series*), p.227; Engineers' and Mechanics' Encyclopædia, vol. 1, p. 288.]

A.D. 1831, February 21.—No. 6085.

ABBEY, Richard.—"A new mode of preparing the leaf of a "British plant for producing a healthy beverage by infusion."

The plant is the thorn, by preference the hawthorn. The leaves are gathered from April to September, both inclusive; after being carefully picked over and cleansed, they are rinced, drained, put in a moist state into a steamer, and steamed over a brisk fire until they change to an olive colour or thereabouts and "have lost all their elasticity and become limp and "flabby." The leaves are then taken out of the steamer and are spread out to be dried on an iron hot plate; they are to be constantly and slowly turned until they are perfectly dry; and when thus prepared they "will keep without injury and "may be put by for use."

The prepared leaves are used as a substitute for tea or coffee.

[Printed, 4*d*. No Drawings. *See* London Journal (*Newton's*), vol. 7 (*conjoined series*), p. 129; Mechanics' Magazine, vol. 15, p. 476; Register of Arts and Sciences, vol. 6 (*new series*), p. 163.]

A.D. 1831, August 11.—No. 6152.

SELDEN, David.—"Improvements in metallic mills for "grinding coffee, corn, drugs, paints, and various other "materials." The back of this mill is an iron plate, having "a circular part with a flat surface," an ear extending from one side of the circular part and pierced with holes for screws whereby the mill is fastened to a support, a dovetail-formed piece extending from the top of the circular part and forming the back of the hopper, and a small recess below forming the back of the spout. In the middle of the circular part is a square cavity, which holds a washer "to act against the end "of the central axle of the runner." The runner is shaped "nearly as the segment of a sphere or of an extremely obtuse "cone;" its circular edge at the back part bears against the plate; the back end of its axle bears against the washer, and the front end carries a crank handle or rigger. A cap, "which answers to the bed of the mill," is conical, "but not "quite so obtuse as the surface of the runner, in order that a "wider space may be left toward the apex of the cone, for the "articles in grinding to be first broken and then gradually "reduced to fine powder" as they approach the outer edges of the cones. The surfaces of the runner and the cap are cut into teeth in oblique directions, commencing from the axle and extending to the edges. "Five or more diagonal teeth," according to the size of the mill, "are cut deep near the "centre" and "diminished toward the edges to a fine score." These teeth are "placed with their sharp angles toward the "work;" the spaces between them are cut "into angular "teeth;" and on the periphery of the runner are "projecting "pieces at small distances apart as clearers to carry round "the material when ground" to the spout. The distance between the runner and the cap is regulated by a screw at the back of the washer; a piece at the bottom of the cap completes the spout; and a piece fastened on by screws or rivets completes the hopper.

Some parts of the mill, namely the hopper, the edges of the cones, and the spout, admit of modifications.

[Printed, 8*d*. Drawing. *See* London Journal (*Newton's*), vol. 1 (*conjoined series*), p. 53; Register of Arts and Sciences, vol. 7 (*new series*), p. 72; Rolls Chapel Reports, 7th Report, p 136.]

A.D. 1834, June 24.—No. 6632.

LYMAN, John Chester. — "Improvements in hulling, "cleansing, or polishing rice, bearding or peeling barley, and "hulling or cleansing coffee." The improvement consists in applying "friction to the grain by means of metallic "points."

In the mill described "two flat or millstone-shaped circular "discs" termed "polishers" are employed; the upper one revolves on a vertical spindle; the lower one is fixed in a horizontal position upon a frame or platform. The discs are either of wood or cast-iron skeletons or frames faced on one side with wood; the upper surface of the under disc and the lower surface of the upper disc are covered with "strong card "teeth of metallic wire firmly set in leather or other strong "elastic substance." When the cardwork is fastened on, the wire exhibits "a plane of points," except that "a slight and "gradually diminishing convexity extends from sixteen to "eighteen inches around the eye or central opening" of the upper disc to admit the grain with greater freedom between the discs.

The patentee claims only "the polishers," the rest of the machinery and the process of hulling having "long been "known to the public."

[Printed, 6*d*. Drawing. *See* Repertory of Arts, vol. 4 (*new series*), p. 270; London Journal (*Newton's*), vol. 8 (*conjoined series*), p. 305.]

A.D. 1837, March 21.—No. 7329.

NEILSON, Robert. — "A machine for preparing and "cleaning coffee from the pod or husk, and separating the "different qualities so as to render it better adapted for the "purposes of roasting and consumption."

[No Specification enrolled.]

A.D. 1837, August 5.—No. 7414.

MAC EWAN, Alexander. — "A process for the improvement of teas as ordinarily imported." The patentee improves his teas by heating them in a stove or a room so as to produce "a moistening or sweating" in them.

The form of the stove or room is not material, provided that, when the door is shut, it is nearly air-tight. From twenty to forty chests may be operated upon at one time, and the packages in which the tea is imported are well adapted for the process, provided they are close-jointed, "as the moisture "which arises in the tea during the process should not be "allowed perceptibly to evaporate." The stove or room should be raised to and continue at a temperature of from 140° to 150° Fahr. The time required varies from four to six days, and the tea may then be put into the ordinary store-room and allowed to cool.

[Printed, 4*d*. No Drawings.]

A.D. 1842, June 9.—No 9383.

SEARLE, Charles. — "Improved preparations of tea, coffee, cocoa, and milk." The cream is taken off from the milk, and the milk, "adding thereto not less than one-fortieth part of loaf "sugar by weight," is put into a vessel surrounded by or contained in a water bath. The aqueous matter is evaporated from the milk, taking care that the heat does not injure it. In this manner "a product of milk may be obtained in a pure "and perfectly dry state."

If the milk is to be combined with tea, coffee, or cocoa, a strong extract of either is to be obtained "by a carefully conducted evaporation of a concentrated aqueous infusion;" the milk "at an advanced state of its preparation towards "solidification" is added to the extract; the evaporation of the compound is continued at a low temperature until the whole is converted into "syrup, paste, candy, or powder;" refined sugar may be added to the compound if desired. Or after the evaporation, arrowroot, isinglass, flavouring essence, &c. may be added, and the compound be made up into lozenges.

[Printed, 4*d*. No Drawings. *See* Repertory of Arts, vol. 1 (*enlarged series*), p. 224; London Journal (*Newton's*), vol. 22 (*conjoined series*), p. 301; Record of Patent Inventions, vol 1, p. 382.]

A.D. 1844, March 28.—No. 10,126.

DAVISON, Robert and SYMINGTON, William. — "A "method or methods of drying, seasoning, and hardening "wood and other articles, parts of which are applicable to the "desiccation of vegetable substances generally." The drying, &c. is effected "by means of rapid currents of heated air," and coffee is mentioned among the substances to which the invention is applicable.

The coffee is put into a perforated cylinder, which revolves on hollow axles and is provided with a door or slide for the admission of the coffee. Under the cylinder is an inlet for heated air from a hot-air chamber, and above it is "a double cover" moving on hinges and having the space between the thicknesses charged with a good non-conductor.

The currents of heated air "are driven immediately into "contact" with the coffee; as the coffee becomes heated, "all "the vapours or acrid matters which it contains are at once "expelled," and the vapours and spent heat pass off through the axles into pipes connected to them.

After the drying is completed, the cylinder is turned over into a trough and emptied.

Air propelled at a velocity of 100 feet per second and heated to 550° Fahr. "is the best speed and temperature for the "desiccation of coffee."

[Printed, 1*s*. Drawings. *See* Engineers' and Architects' Journal, vol. 7, p. 422.]

A.D. 1845, October 16.—No. 10,885.

MARSHALL, John. — "Improvements in preparing cocoa "and chocolate." The patentee claims "the manufacture of "an aromatic chocolate or cocoa by combining therewith "sassafras nuts."

The cocoa or chocolate is reduced to a powder. The sassafras nuts are roasted, then scraped "so as to remove the "external surface," and then ground or otherwise reduced to powder. The mixture preferred consists of 6 parts of cocoa or chocolate, 1 part of sassafras, and 1 part of raw sugar; it is passed through a mill and is then ready for use.

The preparation should not be dissolved "until intended for "use."

[Printed, 4*d*. No Drawings. *See* Repertory of Arts, vol. 8 (*enlarged series*), p. 302; London Journal (*Newton's*), vol. 28 (*conjoined series*), p. 263; Patent Journal, vol. 1, p. 393.]

A.D. 1845, December 4.—No. 10,979.

MEACOCK, James.—"Improvements in pulping, dressing, "and sorting coffee." This invention relates to machinery (1) for removing the pulp from coffee; (2) for dressing and sorting coffee.

1. The principal parts are a hopper to hold the coffee; a revolving cylinder having its periphery covered with toothed plates; a "back surface" (by preference toothed in like manner) kept up to its position near the cylinder by springs pressed on by set screws; an inclined trough of wire "similar "to a sieve" and hinged at its upper end to the frame of the machine; and wheelwork to communicate motion to the cylinder and to shake the trough during the descent of the coffee and pulp into a receiver. "In the event of the "revolving surface becoming clogged, the back surface "would give way and prevent injury to the machine." The coffee, after passing from the hopper, between the cylinder and the back surface, down the trough and into the receiver, is washed and dried.

2. In this machine the coffee descends from a hopper into a case enclosing "two circular surfaces." One of these surfaces revolves; the other is fixed, and in its centre is a hole, "so "that the coffee as it descends may enter between the two "surfaces." Each surface is faced with metal teeth or wire cards, and the coffee descends, "freed from the outer skin or "shell," into another case enclosing two surfaces similar to the former ones but carrying "close rubbing surfaces." The coffee falls, being now "more completely dressed," into a trough, whence it is raised into another trough by an "elevator" consisting of "an endless strap with buckets." From this

trough the coffee descends into an apparatus where it is sorted "into grains of three sizes," and in its descent meets with a blast of air which drives off the dust, &c. The sorting apparatus "consists of a cylinder of wire cloth of two different "degrees of fineness." The smallest grains only fall through the finer meshes; the others pass on, and such as are small enough fall through the larger meshes, whilst the largest grains pass out of the cylinder. Inside the cylinder the grains are kept moving against the wire cloth by a revolving "frame of brushes." The revolving surfaces in the cases "move back" by means of springs, if the feeding of the coffee between the surfaces "be too much." The upper trough has (by preference) woven wire placed across it to prevent the coffee from flowing too freely down it; it receives also "a "shaking motion" to ensure the descent of the coffee from it.

The patentee does not claim the wheelwork, shafts, bands, &c. required for setting the machines in motion.

[Printed, 1*s*. 6*d*. Drawings. *See* Patent Journal, vol. 1, p. 60.]

A.D. 1846, March 25.—No. 11,149.

SMITH, Charles.—"Improvements in cooking and culinary "utensils and methods of heating and suspending or fastening "articles of domestic use and similar purposes." In the "third head or claim" of his invention the patentee describes a method of roasting coffee in a cylinder so as to allow the smoke, vapour, &c. generated during the roasting to escape.

The cylinder is perforated and revolves by means of a crank handle or otherwise; it is provided with "holes covered with "slides" for the introduction, inspection, and removal of the coffee. A casing encloses the cylinder; its lid or cover is sufficiently perforated to allow the escape of the smoke, &c.; and it is made with a flue on each side for the admission of heat. The axes of the cylinder rest on the sides of the casing, and "the apparatus is placed on or suspended over an ordinary "fire."

[Printed, 3*s*. 6*d*. Drawings. *See* London Journal (*Newton's*), vol. 29 (*conjoined series*), p. 356.]

A.D. 1846, May 5.—No. 11,198.

PIDDING, William.—"An improved process for preserving "the flavour of coffee and cocoa, or of any preparation

" thereof, from the effects of the atmosphere." The coffee, cocoa, &c. when ground is packed into air-tight cases or envelopes made of gelatine, or of glass, bone, wood, or other hard substance, or of skin, bladder, paper, cloth, or substance capable of being folded.

The cases are usually of small dimensions and are made on a wooden block. If they are made of gelatine, the edges are united by lapping over and moisture; if of hard substance, the edges are cemented together with gelatine; if of fabric, the fabric is rendered air-tight by a coating of gelatine, and the joinings are cemented over therewith.

To charge the case, it is put into a " copper cup made " exactly the size to receive the case;" the coffee, &c. is rammed into the case; and the cover of the case is fastened on air-tight with gelatine.

[Printed, 8*d*. Drawing. *See* Patent Journal, vol. 1, p. 410; Macnaghten and Gordon's Reports, vol. 1, p, 56; Law Journal (Chancery), vol. 18 (*new series*), p. 295.]

A.D. 1847, February 25.—No. 11,599.

SNOWDEN, Robert.—" Improvements in treating or dressing " coffee to render it more wholesome for use." The coffee berries are first cleansed from dirt, &c. by passing through a " dressing apparatus " of the following construction:—A cylinder of wire gauze or finely perforated metal is fixed on a frame. Inside the cylinder is a revolving shaft carrying brushes " placed spirally or otherwise." Above and at one end of the cylinder is a hopper, and at the opposite end in the bottom is an opening, through which the berries descend (after subjection to the action of the brushes) through an inclined shoot into a receptacle. The berries, " while falling upon the " shoot," are subjected to a current of air from a " fanner " which is connected to one end of the shaft.

The cleansed berries then undergo a " semiroasting " process. They are put into a similar (but revolving) cylinder, which is surrounded by a " close cylinder divided longitudinally " along its diameter but fastened by hinges." Along the top of the outer cylinder is an opening for the escape of vapour, &c. from the inner cylinder. After this process the berries are passed through the dressing apparatus.

The roasting is completed in a revolving cylinder " made of " glass, porcelain, or earthenware, or lined with glass, por-

"celain, earthenware, or enamel." The shaft (which passes through the cylinder) is hollow and perforated for the purpose of carrying off vapours, &c. The berries when roasted are passed through the dressing apparatus.

The final process, called by the patentee "the crushing or "breaking," is effected by causing the berries to descend from a hopper between two rollers either plain or fluted, and adjustable as to distance by set screws. The berries, being again passed through the dressing apparatus, are "in a fit and "proper state to be ground."

The patentee describes "a modification of the cooling "apparatus" for use after the roasting process:—The shaft of a revolving cylinder is hollow and perforated for the passage of atmospheric air into the interior of the cylinder, the cylinder being made of wire gauze or perforated metal.

[Printed, 10*d*. Drawings. *See* London Journal (*Newton's*), vol. 31 (*conjoined series*), p. 263; Patent Journal, vol. 3, p. 333.]

A.D. 1847, October 21.—No. 11,914.

BANKS, Robert Richardson.—"A new method of artificially "curing and preserving the berries of coffee by a drying "apparatus." When the coffee has been pulped and washed, it is spread out on the platforms of a store constructed with "an air chamber underneath the floor and drying platforms "above it." In the air chamber are two openings with valves, the one for the admission of atmospheric air, the other of heated air. At the opposite end of the store there is an opening under the roof for the egress of vitiated air; this opening communicates by a descending flue "with a ventilator "placed under the floor of the pulping house adjoining." The floor of the store and the "floors of the drying platforms" are perforated.

"A partial vacuum" is created by means of the ventilator; air is caused to enter by the openings in the air chamber; the air ascends through the perforations, carries off the moisture, escapes through the opening under the roof, descends through the flue, and "is discharged into a second air chamber under "a perforated draining platform in the pulping house." The air, "having no other means of escape, is impelled upwards "and made to pass through the draining platform and the "wet coffee placed thereon, thus also evaporating and drying

" off the surface moisture before the coffee is removed into " the store."

In warm weather, the valves may be shut; the hot air (inside the store), "which is or may be acquired without " artificial means," may be made to descend through the coffee and be " discharged directly from the air chamber by " the ventilator." A supply of fresh air enters by the opening under the roof.

Again, "direct solar heat" may be employed in curing coffee "on external platforms." The coffee is spread over a perforated surface raised some distance above the ground; the surface is "enclosed by sides which are air-tight;" a partial vacuum is created within the space by a ventilator; and the air "is made to pass downwards through the coffee and to " communicate heat to the whole depth" thereof.

[Printed, 8*d*. Drawing. *See* London Journal (*Newton's*), vol. 32 (*conjoined series*), p. 327; Patent Journal, vol. 4, p. 578.]

A.D. 1847, November 6.—No. 11,947.

DAVISON, Robert, and SYMINGTON, William.—" Improvements in the application of heat to the preparation, " desiccation, and preservation of bread stuffs, confectionary, " pulse, meats, vegetables, and other edible substances." The patentees claim six improvements on the invention for which they obtained Letters Patent dated March 26th 1844, No. 10,126. One claim relates to the roasting of coffee, chicory, cocoa, and other substances, "in so far as regards the form of the cylinders " and the arrangements for keeping the same permanently in " their places during the discharging of the same."

Two revolving cylinders, "perforated all over with small holes " for the admission of the heated air," are mounted parallel to one another in a casing. In the sides of each cylinder are perforated cavities or recesses "of a U form," and those on one side "are placed skew-wise in relation to those on the " opposite side." Each cylinder is covered lengthwise "by a " close semicylindrical cover." The cover is formed of two plates with a layer of charcoal dust or other non-conductor of heat between them. Each cover is provided with a valve or door (through which access is gained to the door of its cylinder) and with an aperture for the escape of vapours, &c.; the aperture is furnished with a damper. The contents of the cylinders are discharged down an inclined shoot, thereby allowing the cylinders "to remain permanently in their places;" and at the bottom of the shoots there is a valve "to prevent any escape "of the heated air when the shoot is not in use." The rotation of the cylinders is effected by means "similar to those "made use of" in the Specification of the former Letters Patent, and heated air is admitted to the cylinders or shut off from them by means of a slide.

[Printed, 10*d*. Drawing. *See* Repertory of Arts, vol. 16 (*enlarged series*), p. 159; London Journal (*Newton's*), vol. 37 (*conjoined series*), p. 85; Mechanics' Magazine, vol. 53, p. 95; Patent Journal, vol. 9, p. 203.]

A.D. 1847, December 8.—No. 11,988.

DAKIN, WILLIAM.—"Improvements in cleaning and roasting "coffee, in the apparatus and machinery to be used therein."

[No Specification enrolled.]

A.D. 1848, February 8.—No. 12,058.

HEBERT, LUKE. — "Improved mechanism for reducing, "grinding, and sifting bark, sugar, coffee, seeds, and other "substances." The improvements belonging to this series are,—

1. "Grinders for comminuting coffee, seeds, &c.":—The revolving grinder consists of "a metallic core containing only "the coarser grooves" and "a flat ring" containing the fine grooves. The stationary grinder consists of "a case with its "ring" provided with grooves like those on the revolving grinder "but crossing them at the proper angle" when in action.

2. "Conical mills":—The first improvement consists in making the core of such dimensions that, when new and adjusted in the case in a working position, "it shall project "beyond the grinding surface of the eduction end of the "case in such a degree that, after the mill shall have been "recut, the core shall, when replaced in a working position, "continue to project" beyond the said surface.

The second, in making the bearing of the smaller end of the core "not at the extremity of but within the core," thereby "admitting the smaller end of the core to be shortened and "preserve an ample space for the feed."

The third, in making the core or case, or both, partly of wrought and partly of cast iron; the portions containing the coarser grooves are of cast iron, those containing the finer grooves are "wrought iron rings fitted to the cast iron by "turning and screwing."

The fourth, "in fixing wrought iron conical grinders into "and over cast iron forms."

3. Combining a conical mill and a sifting machine "on one "horizontal axis": —"Adjustable brushes," having their tufts placed in oblique rows, sweep the ground material over "a half cylinder of wire gauze" into a drawer.

4. Mounting grinders in a vertical mill with or without a horizontal sifting machine on the same axis:—"Fly nuts" fasten the hopper to the box; thus "the hopper and the "stationary grinder are removable in one piece by undoing" the nuts, leaving the running grinder "perfectly detached." If a sifting machine is combined therewith, "flat grinders" are used; the axis is prolonged "several inches below the "running grinder;" the cross bar of the box or frame is fixed "suitably low;" a gauze disc is fixed above the bar; and brushes are attached to the axis or the running grinder.

5. A machine "for sifting and reducing tea":—This comprises a hopper, a feeding worm, a conical sieve of wire gauze revolving on a horizontal axle, and knives or equivalents set in pairs, the one inside, the other outside the base of the cone. As the cone revolves, "the fine tea is sifted away;" the coarser leaves arrive opposite to "the knives by which they "are broken."

In another machine for sifting and reducing tea, "an "inclined flat sieve" is suspended at each side to the top of a frame and hangs loosely over a pin at the upper end. To the lower end of the sieve is fixed a bar with curved ends. On a shelf below is placed one of the patentee's "patent tea mills," and on each end of the axle of the mill is fixed a cam carrying four arms "not placed opposite to each other." The agitation given by the arms to the bar "causes the tea to run over the "sieve, the small passing through it, and the large to be "thrown into the mill and broken."

Several figures in the first sheet of drawings shew "the "construction of sieves with flat sides and of elliptical sieves "revolving or vibrating on horizontal or inclined axes." Blades of metal are attached to the inner surface of revolving sieves.

[Printed, 1*s*. 2*d*. Drawings. *See* Patent Journal, vol. 5, p. 296.]

A.D. 1848, July 3.—No. 12,198.

DAKIN, Elizabeth.—" Improvements in cleaning and roasting " of coffee, in the apparatus and machinery to be used therein, " and also in the apparatus for making infusions and decoctions " of coffee." The first improvement consists in introducing " a medium between the cleaning and roasting cylinder or " vessel and the fire by placing it within an oven or other " close vessel, upon the outside of which the fire acts ;" the second in making or lining the cylinder and all parts of the apparatus with which the coffee comes into contact during the process of cleaning, roasting, and cooling, of " gold, silver, " platinum, or other similar metal or metals, or of an alloy " or alloys of metals which do not react prejudicially" upon the coffee ; and the third, in the arrangement of machinery, " consisting of a traversing carriage on a railway," for the purpose of suspending one end of the cylinder and withdrawing it from or passing it into the oven.

The cylinder is provided with a slide or flap or door ; it is secured to end plates, each made with a boss to which a shaft is fastened. One shaft is hollow and connected by a " sus- " pended bearing" to a carriage above ; the other passes through the heating apparatus and carries a chain wheel, clutch, &c. The details " may be modified and varied ;" and modifications for suspending the cylinder and " facilitating " the ingress and egress from the oven" may be adopted. A " taster " passes into and through the hollow shaft ; it consists of a perforated tube having a part cut away in the middle for the purpose of holding a number of the coffee berries and drawing them out of the cylinder for examination ; the handle is of non-conducting material and detachable, so that it may not prevent the free escape of vapour, &c. through the shaft.

The coffee when roasted is cooled in a vessel or case, perforated at bottom and caused to revolve, and the cooling may be facilitated by the addition of a fan or other contrivance.

[Printed, 2*s*. Drawings. *See* Mechanics' Magazine, vol. 50, p. 22 ; Practical Mechanics' Journal, vol. 1, p. 255 ; Artizan, vol. 6, p. 251 ; Patent Journal, vol. 5, p. 361.]

A.D. 1848, November 2.—No. 12,313.

KNOWLYS, Thomas John.—" Improvements in the application, removal, and compression of atmospheric air." The first part of this invention consists "in applying and removing "heated air in the roasting of coffee, chicory, and other "materials used with or as a substitute for coffee and cocoa."

The roasting vessel is a revolving cylinder closely perforated and made of fire-stone or of metal lined with enamel or vitreous substance; the shape preferred is "octagonal, hexa-"gonal, or angular in some form." One of the sides is left open for charging and discharging, and it is closed by a perforated door. The ends may (or not) be perforated. The cylinder rotates slowly on bearings in an oven, wherein the heat is kept up at the requisite degree; the door or other part of the oven is provided with means for admitting air; and a pipe is carried from the oven into the flue of the fire which heats the oven, so that the heated air and vapours, &c. from the coffee may pass freely away.

Instead of a revolving vessel, perforated trays of like material may be used; the coffee may be agitated thereon by moving the trays to and fro or by means of rakes or other contrivance.

[Printed, 4*d*. No Drawings. *See* Repertory of Arts, vol. 15 (*enlarged series*), p. 160; London Journal (*Newton's*), vol. 34 (*conjoined series*), p. 410; Mechanics' Magazine, vol. 50, p. 429; Patent Journal, vol. 7, p. 59.]

A.D. 1849, September 13.—No. 12,766.

PRETERRE, APOLEONI PIERRE.—(*A communication.*)—"Im-"provements in the construction of coffee and tea pots, and "in apparatus for cooking, and in apparatus for roasting and "grinding coffee." In the apparatus for roasting coffee, the novelty consists in connecting to the revolving cylinder "a "weighted lever, by which is indicated the amount of roast-"ing that the coffee has undergone." The cylinder with its contents is weighed before the roasting begins, and from time to time during the roasting; the loss of weight produced by the roasting will be marked by a hand on the dial of the lever. "Variations may be made" in the arrangement of the roasting and the weighing apparatus.

The improvement in grinding coffee consists in the employment of a "screw collar or nut for regulating the mill." A screw is cut on the axle of the mill to receive the collar, "and "by means of this collar the mill is closed or opened accord-"ing as it is required to grind the coffee fine or coarse." To retain the collar in position, a thumb or set screw may be passed through it.

[Printed, 10*d*. Drawing. *See* Repertory of Arts, vol. 15 (*enlarged series*), p. 193; Mechanics' Magazine, vol. 52, pp. 220, 257; Patent Journal, vol. 8, p. 296.]

A.D. 1850, May 25.—No. 13,081.

RADLEY William and MEYER Frederick.—" Improvements " in treating fatty, oleaginous, resinous, bituminous, and " cerous bodies, in the manufacture and application of them " and of their components and subsidiary products, together " with the apparatus to be employed therein to new and other " useful purposes." The thirteenth claim of the patentees is " the production of theobromine and 'bromage' from cocoa " and other beans and kernels" and the application of the " marc" thereof to the manufacture of "pastes and powders " of cocoa, chocolate, and broma" of a new kind which the patentees call 'bromage.'

The process preferred by the patentees is to heat the beans in a perforated cylinder " until they sweat and begin to evolve " a watery vapour free from the empyreumatic odour charac- " teristic of the commencement of the real roasting process," and then to allow them to become cold "in order to rasp or rind " and press them," or what is preferable " at once to bag and " submit them to severe pressure" with a gradually increasing force the better to obtain "the full extraction of the theobro- " mine." The marc is subjected " to the full roasting process," and if it is desirable "to retain the aroma of the roasting " process," the cylinder or vessel used is " set on one end and " provided interiorly with a number of perforated trays," so that the marc laid thereon may be " permeated by steam, air, " and gas, or either of them, heated to the required tempera- " ture." The marc is afterwards " condimented and flavoured " or not with any suitable or usual aromatic and sugary " material."

The marcs of "all other oleaginous seeds and fruits," may, when freed from oil and roasted, "become subservient as a " beverage," either separate, or combined with each other and with that of the cocoa.

[Printed, 1*s*. 4*d*. Drawings. *See* Mechanics' Magazine, vol. 53, p. 456; Patent Journal, vol. 10, pp. 104, 115.]

A.D. 1850, November 14.—No. 13,346.

DUCKWORTH, William.—“ Improvements in the manufacture of chicory, with certain improvements in the machinery “ or apparatus for the manufacture thereof.” The first part of this invention relates to the preparation of chicory for grinding:—A set of roasting cylinders (usually four) of solid or plate metal are so arranged over a furnace that there is free space left for the heat &c. from the fire to circulate about them. Inside each cylinder is an endless screw, and the spindles of the screws are geared together so that they revolve simultaneously. The chicory cut into pieces drops from a hopper into the first cylinder at one end, is moved forward to the opposite end by the action of the screw, passes out into the second cylinder, is impelled through it “ but in a contrary direction,” and drops into the third cylinder. From the third cylinder the chicory is transferred to a “ steaming cylinder ” made of wire cloth or perforated metal, enclosed in a case which is kept filled with steam, and carrying inside an endless screw. The chicory after traversing the steaming cylinder falls into “ a “ short inclined cylinder ” also provided with an endless screw, by which the chicory “ is raised up into the last of the “ roasting cylinders ;” after passing through this it is discharged through a spout. If the chicory does not require to be steamed, it is discharged from the third cylinder or transferred directly into the fourth, The cylinders may be made to revolve along with the screws; or the screws may be stationary and the cylinders alone revolving. Attached to the apparatus are “ two supplementary cylinders,” similar to the foregoing, quite detached from the others, and geared together; they are used for the purpose of giving the chicory “ an additional “ roasting ” if required, or for roasting chicory which does not require steaming.

The second part consists in “ moulding or compressing the “ chicory into pieces of the shape of berries and other arbi- “ trary forms :”—The chicory drops from a hopper into a mill and after being ground therein passes between a pair of adjustable “ forming rollers,” mounted beneath the mill, and having “ numerous cavities sunk in their surfaces of the particular “ form intended to be given to the chicory.”

[Printed, 10*d*. Drawing. *See* Mechanics' Magazine, vol. 54, pp. 414, 442; Patent Journal, vol. 11, p. 87.]

A.D. 1851, April 2.—No. 13,582.

HUCKVALE, Thomas.—"Improvements in treating mangel-"wurzel, and in making drinks and other preparations there-"from." The root is to be used "as a substitute for or in "combination with coffee:"—For this purpose it is washed, cut into small pieces, dried, roasted, and ground in like manner as coffee is roasted and ground.

The leaves are to be used as a substitute for tea:—For this purpose they are cut into shreds, dried, and subjected to artificial heat. The patentee stirs the dried cuttings on a heated plate "till they just begin to char."

[Printed, 4*d*. No Drawings. *See* Repertory of Arts, vol. 18 (*enlarged series*), p. 380; London Journal (*Newton's*), vol. 39 (*conjoined series*), p. 515; Mechanics' Magazine, vol. 55, p. 299; Patent Journal, vol. 12, p. 27.]

A.D. 1852, May 1.—No. 14,110.

GEE, Edward.—"Improvements in apparatus for roasting "coffee and cocoa." An outer cylinder or casing is fixed on a base, and inside it there is "a conical fire box or close chamber" underneath a perforated plate whereon the matters to be roasted are laid. A flue allows the products of combustion to escape from the fire box, and a door hinged to the cylinder closes an aperture for the admission of fuel as well as for regulating the heat. The fire box is supported on a stand which rests on the base, and a tray underneath forms an ash pit.

The top of the cylinder "projects above and surrounds the "perforated plate." At one part of the circumference there is a shoot furnished with a door which is hinged to the cylinder, and by opening the door the matters when roasted are taken out; the door is kept open by means of a pawl and ratchet. In order to move or turn over the matters whilst being roasted, "an upright central axis" is caused to rotate in the upper part of the cylinder by means of bevel gearing; it carries arms to which "inclined blades" are hinged; these blades serve also, when the roasting is finished, to discharge the matters through the opening.

The patentee does not confine himself strictly to the foregoing details.

[Printed, 6*d*. Drawing. *See* Repertory of Arts, vol. 21 (*enlarged series*), p. 158; Mechanics' Magazine, vol. 57, p. 396.]

A.D. 1852, September 24.—No. 14,303.

TENNENT, Robert Bowman.—(*A communication.*)—" Im-" provements in the mode of pulping cherry coffee, and in the " machinery applicable thereto." Two cylinders are mounted in a frame; the one is called the pulping, the other the sifting cylinder; the velocity of the latter when rotating is from " one " third to one fifth " of the former; the bearings of the latter " admit of a slight motion to and fro longitudinally so as to " determine the amount of space requisite for the escape of " the beans." A bar of iron called the chop is " set just free " of the pulping cylinder. A feed box on a moveable frame is situate above the pulping cylinder. Two plates of sheet iron bolted to the moveable frame meet two plates attached to the chop; the plates " fit closely against the ends of the cylinders " and enclose the space between them. A slide, shod with iron and called the doctor, is fitted in the moveable frame and adjusted to approach as closely as possible to the sifting cylinder without touching it; another slide prevents the berries from escaping over the pulping cylinder when the machine is overfed. The upper edge of a " backboard " abuts against the chop; this board keeps " the pulp, which the pulping cylinder " carries down behind the chop, separate from the pulped " coffee which escapes in front of the chop between it and the " sifting cylinder." A front board guides away and keeps separate " that part of the pulp which is separated from the " coffee by the doctor." Both cylinders are covered with a metallic cover which is " punched like a nutmeg grater;" the cover is nailed on to battens, " spaces or hollows being left " beneath the covering for the accumulation or escape of the " slime or pulp of the coffee." The cylinders are geared together, and the machine is worked by a winch.

The coffee to be pulped is put into the feed box " along with " a stream of water," which, " as it flows over the side of the " feed box, carries over with it the fruit, leaving at the bottom of " the box any sand or stones which would injure the cylinders."

In a machine which completes the pulping by clearing off the slime or pulp that remains on the coffee and clings to it after the rind has been removed, the two cylinders are covered with card cloth or brushes; they are set a little farther apart than before, and are made each to revolve at a velocity of from

300 to 400 revolutions per minute. The chop, iron plates, doctor, back and front boards, are similar to those in the first machine; but the feed box has a cover to prevent the coffee from flying out "by reason of the great velocity of the cylin-" ders."

The inventor describes the action of each machine and modifications of the first, one being "a double acting machine;" he does not however confine himself "to the precise forms, " dimensions, and details shewn in the drawings."

[Printed, 10*d*. Drawings. *See* Mechanics' Magazine, vol. 58, p. 297.]

PATENT LAW AMENDMENT ACT, 1852.

1852.

A.D. 1852, October 19.—No. 447.

GADD, George. — "Improvements in apparatus for roast-" ing coffee." This apparatus consists of a cylinder to hold the coffee, an outer casing for the cylinder, and a frame carrying standards which bear the cylinder and casing."

The cylinder is "composed of rods of small diameter fixed " in circular end plates;" some of the rods however are " able to slide" thereby allowing the cylinder to be charged and emptied. The axes of the cylinder are of such a length, and the standards are so placed, that the cylinder may slide in and out of the casing; the cylinder is rotated by a winch handle. The casing covers the cylinder "at the upper part, " and also at the front and two ends," and two half-doors close the opening through which the cylinder passes into it.

The roasting is carried on "in front" of a fire, and the vapours, &c. from the coffee during the process pass from the open portion of the casing "over the fire into the flue above."

[Printed, 6*d*. Drawing.]

A.D. 1852, October 23.—No. 504.

GEYELIN, George Kennedy.—"An improved machine for " grinding pigments or other vegetable or mineral sub-

" tances." The improvement claimed is the employment of " three conical rollers " working in a horizontal position. The rollers are mounted in framework " in a reversed position one " to another;" they revolve " at different surface speeds," and this rotation causes the substance to be ground " to be " drawn to their centre, where the chief grinding power is " exerted." Their axles are geared together, and there are fast and loose pulleys on the axle of the middle roller. The outside rollers are adjustable as to distance from the middle roller. The substance, descending from a hopper, passes through between the middle and one of the outside rollers; it is thence " by reason of the greater surface speed " of the middle roller taken off the outside roller and brought up and again ground between the middle and the other outside roller. The substance is removed from this outside roller by a weighted scraper.

When chocolate or cocoa is to be ground, an upper set of rollers "acting as crushers or mixers " are employed.

The patentee sometimes uses more than three horizontal rollers.

[Printed, 10*d*. Drawings.]

A.D. 1852, November 15.—No. 752.

BERRY, GEORGE.—(*Provisional protection only.*)—" An im" proved method of roasting coffee." Previous to beginning the process of roasting, the air (as far as possible) is exhausted out of the vessel in which the coffee is to be roasted; and during the process, the principal portion of the steam, gas, &c. generated thereby is exhausted. " Coffee so roasted retains the " aromatic products and properties which are dissipated along " with the steam, gas," &c.

[Printed, 4*d*. No Drawings.]

1853.

A.D. 1853, February 1.—No. 273.

COCKERILL, JOHN and BARNETT, THOMAS.—" Improve" ments in the construction and use of coffee roasters." The roasting takes place in front of the fire. The fire place is constructed with a boiler for the purpose of generating steam, and the steam is used to work a steam engine which communicates rotary motion to the roaster or roasters.

In the Final Specification two roasters are employed; each is "constructed in the form of a frustum of a cone;" the base or open end is covered with wire gauze or perforated plate; the rest is of sheet or cast iron; and the base is provided with a door or valve for charging and emptying. When the roasters are in use, the bases face each other; each is furnished with a shaft whereon it rotates and whereby it can be shifted nearer to or farther from the fire. "Each front of the fire place is "surrounded by a ring of metal," so that the cylindrical part of the roaster may rotate within the ring.

The coffee, being carried round the roaster "and falling on "the inclined or conical part" of the roaster, "seeks the "larger diameter and runs down to the wire end of the vessel "thus producing a perfect regularity in roasting."

In the Provisional Specification one roaster only is employed; it is made of wire gauze or perforated plate, and through it passes a square shaft by means of which it revolves in front of the fire.

The patentees do not confine themselves to the arrangements detailed in their Specification; the roasters may be turned by crank handles.

[Printed, 10*d*. Drawings.]

A.D. 1853, March 18.—No. 679.

TENNENT, Robert Bowman. — (*A communication.*) — (*Provisional protection only.*)—"An improvement in the machinery "employed for pulping coffee." Instead of covering the rollers with "metal roughened by punching up the metal," the inventor drives into or otherwise attaches to the periphery of the rollers "metal studs, pins, or projections of any suitable "form;" these act with efficiency on the pulp or rind of the berries, but "will not be liable to crush the berries."

[Printed, 4*d*. No Drawings.]

A.D. 1853, April 8.—No. 848.

BRADEN, Alexander Samuel. — "Improvements in apparatus for roasting coffee, cocoa, and other vegetable matters, "and for cooling the same when roasted." The coffee, &c. is roasted on a metal table "revolving within a suitable case" and kept heated by means of gas jets or otherwise. The coffee, &c. is kept in motion by stirrers, and is removed through an outlet provided with a sliding door and a spout.'

The axle whereby the table revolves carries at its upper end a bevelled pinion; this takes into a bevelled pinion fixed on a horizontal shaft, which may be rotated by any suitable means. Another bevelled pinion on the shaft communicates motion to a bevelled pinion on the top of a spindle which carries the stirrers. The spindle carries other arms whereto are pinned scrapers "formed with edges to clear the surface of the table." A guide plate tends either to throw the coffee, &c. towards the middle of the table or to direct it to the outlet, according to the direction in which the table is revolving. Another plate, when the table is revolving in one direction, throws the coffee, &c. outwards towards the stirrers; the lower part of this plate turns on a hinge joint, so that when the direction of rotation is reversed, the lower part permits the coffee, &c. to pass freely.

The cooling apparatus is similar to the foregoing, except that a sieve is substituted for the table and the heating contrivance. If desired, currents of cold air may be caused to flow through the sieve.

[Printed, 6*d*. Drawing.]

A.D. 1853, April 29.—No. 1040.

DAVISON, Robert and HORROCKS, James Scott.—"Im-" provements in the means of conveying and distributing or " separating granular and other substances." In this invention the process of roasting berries is effected by the aid of the Archimedean screw. Tubes of woven wire or perforated metal are arranged one above the other; they "have pipes of communication from one to the other at their ends;" and inside of each tube is an Archimedean screw having "plates, ribs, or " blades applied between the threads," so that the berries " are turned over during their conveyance" by the screw. The screws are made to revolve by means of wheels in gear with each other. The tubes are enclosed in a case; the berries are poured into the uppermost tube at one end through a hopper; they pass through each tube, being constantly turned over by the plates, and are discharged through a shoot connected to the lowest tube.

[Printed, 6*d*. Drawing.]

A.D. 1853, May 17.—No. 1213.

BERRY, George. — (*Complete Specification but no Letters Patent.*)—" An improved method of roasting coffee, cocoa, and " chicory." The patentee exhausts the air from the roasting vessel " previous to commencing the process of roasting." During the process he exhausts the steam, gas, &c., generated in the vessel, so that the coffee, &c., when roasted " retains those " aromatic products, which are dissipated along with the " steam, gas," &c. by the methods heretofore in use.

[Printed, 4*d*. No Drawings.]

A.D. 1853, June 16.—No 1468.

FONTAINEMOREAU, Peter Armand le Comte de. — (*A communication.*)—" Improvemements in the preparation of " certain vegetable and alimentary substances." The first part of this invention relates to " extracting and concentrating " the juices of chicory, carrot, the soft acorn of Spain or any " other country, beetroot, barley, oatmeal, and other similar " substances," and employing the juices " for the improve- " ment and cheapening of coffee infusions."

The apparatus required for the purpose is set in brickwork ; it is composed of (1) an extracting boiler open at top ; (2) a concentrating boiler, surrounding the other, closed at top, and provided with a safety valve, a pipe for the egress of steam, and an aperture for the introduction of the extracted liquid ; (3) spiral pipes for circulating steam, having " egress " orifices ; " (4) an outer casing filled with powdered charcoal ; (5) a perforated plate inside the extracting boiler, " having in the centre a receptacle for holding the thicker " parts ; (6) an arrangement of iron bars radiating from the centre, placed over the plate " to support the sacks containing " the substances to be heated ; " (7) a " lower filter " of hair or metallic cloth stretched on a ring ; (8) a tap to each boiler.

The substance is roasted, reduced to powder, enclosed in sacks, put into the extracting boiler (112 lbs. of powder to 33 gallons of water), kept boiling for half an hour; the sacks are pressed "to expel the juices therefrom;" the powders are boiled again and again in other boilers, the sacks being pressed between each boiling; and the juices and liquids are added to the liquid in the extracting boiler. The liquid is put into the concentrating boiler, and the concentration is carried on to any required degree. The concentrated juice may be solidified by mixing it with sugar.

The second part consists in combining the juices with the extracts of dried fruits, &c. "for the preparation of a new "liquid or solid alimentary product."

[Printed, 6*d*. Drawing.]

A.D. 1853, June 18.—No. 1496.

ROBINSON, George.—"Improvements in apparatus for "roasting or desiccating coffee, cocoa, and chicory." The improvements relate to the cylinders or roasting vessels; they are made "of wire in the form of a cage," or of wire cloth, or of wire gauze, supported by a suitable framework, and revolving on an axle. Inside the cylinder is a band "placed "diagonally" and studded with teeth or projections which "accelerate the turning over" of the coffee, &c.; it is slidden in previously to the roasting and drawn out after the process. The wires must be so close together, or the cloth or gauze so fine, that the flame of the fire may not pass through the interstices. The agitating and turning over of the contents of the cylinder will be assisted by fixing it on its axle "slightly "excentric to its centre."

[Printed, 8*d*. Drawing.]

A.D. 1853, August 29.—No. 2004.

JOHNSON, John Henry.—(*A communication from François Durand.*)—"Improvements in the preparation and application "of gluten." The Specification contains 6 varieties of proportions of gluten, flour, and salt for making "gluten bread;" 1 method of making gluten vermicelli; 1 method of making gluten bread from Indian corn flour; and 5 varieties of proportions of cocoa, gluten bread or flour, and sugar, for making "gluten chocolate." For manufacturing the chocolate, the following proportions are given:—

The first consists of about 2 parts of cocoa and 1 of gluten bread.

The second, of 2 parts of cocoa, 2 of sugar, and 1 of gluten bread.

The third, of 4 parts of cocoa, 5 of sugar, and 1 of gluten bread.

The fourth, of 2 parts of cocoa, 2 of sugar, and 1 of pure gluten flour.

The fifth, of 2 parts of cocoa, 2 of sugar, and 1 of "moist " gluten." The gluten is rendered less adhesive "by the " addition of one half its weight of water with 0·002 of pure " muriatic acid, and dried at a stove." The acid may however be omitted.

In each variety the ingredients when mixed are to be reduced to "an impalpable powder." In the fourth, each ingredient should be "operated upon separately."

[Printed, 4*d*. No Drawings.]

1854.

A..D 1854, January 7.—No. 40.

ROSS, Jesse.—(*Letters Patent void for want of Final Specification.*)—" Improvements in making compounds of chocolate, " cocoa, and other ingredients for breakfast and occasional " beverages." The compounds are made by mixing together either (1) cocoa or chocolate and coffee; (2) cocoa or chocolate, coffee, and chicory; (3) cocoa, chocolate, and coffee; (4) or cocoa, chocolate, coffee, and chicory. The combinations and proportions preferred are,

1. 40 lbs. of cocoa and 60 lbs. of coffee.
2. 40 lbs. of cocoa, 40 lbs. of coffee, and 20 lbs. of chicory.
3. 20 lbs. of cocoa, 20 lbs. of chocolate powder, and 60 lbs. of coffee.
4. 20 lbs. of cocoa, 20 lbs. of chocolate powder, 40 lbs. of coffee, and 20 lbs. of chicory.
5. 40 lbs. of chocolate powder and 60 lbs. of coffee.
6. 40 lbs. of chocolate powder, 40 lbs. of coffee, and 20 lbs. of chicory.

[Printed, 4*d*. No Drawings.]

A.D. 1854, May 18.—No. 1113.

ROBERTSON, James Curle.—(*Provisional protection only.*)—"Improvements in the preparation and roasting of coffee and other substances." The object of this invention is to interpose "an external diaphragm and air space" between the fire and the coffee.

The coffee is put into an "ordinary revolving roasting "cylinder," and the cylinder is enclosed in a casing, leaving an air space between the two. When the casing is heated, "a hot-air bath" is formed all round the cylinder. "A testing rod or scoop" is fitted into the hollow spindle of the cylinder.

[Printed, 4*d*. No Drawings.]

A.D. 1854, May 30.—No. 1201.

LOYSEL, Edward.—"Improvements in grinding or pulverizing vegetable substances, and in obtaining infusions or "extracts from tea." The chamber or vessel which contains the substance to be ground is of any suitable shape and is provided with a cover. At the bottom of the chamber is an opening which communicates with a mill. The grinding barrel of the mill carries a vertical spindle which passes up through the chamber nearly to the cover, and in the cover there is a hole for the insertion of the key of a removable winch handle. The substance when ground falls into a receiver, which stands "on "the upper end of a spring weighing machine," and the machine is provided with a pointer and scale "to indicate the "weight of the contents" of the receiver.

The figure in one of the annexed sheets of drawings represents "a double apparatus," the one for grinding coffee, the other for grinding tea. The receiver and weighing machine are removable and can be placed under the mill in use.

A portable grinding apparatus consists of an upper and a lower chamber united by a bayonet joint. The upper chamber contains the mill and the material to be ground; the lower one receives the material when ground.

[Printed, 1*s*. Drawings.]

A.D. 1854, July 7.—No. 1496.

ROSS, Jesse.—(*Provisional protection only.*)—"Improvements "in making compounds of chocolate, cocoa, and other ingre-

"dients for breakfast and occasional beverages." The compounds consist of a mixture either (1) of cocoa or chocolate and coffee; (2) of cocoa or chocolate, coffee, and chicory; (3) of cocoa or chocolate, cocoa, chocolate, and coffee; (4) of cocoa, chocolate, and coffee; or (5) of cocoa, chocolate, coffee, and chicory.

Six combinations are mentioned; the first is composed of 5 lbs. of chocolate, 25 lbs. of Trinidad cocoa, 55 lbs. of soluble cocoa, and 25 lbs of chicory.

The second, of 20 lbs. of chocolate, 20 lbs. of Trinidad cocoa, 40 lbs. of soluble cocoa, and 20 lbs. of chicory.

The third, of 5 lbs. of chocolate, 5 lbs. of Trinidad cocoa, 70 lbs. of soluble cocoa, and 20 lbs. of chicory.

The fourth, of 20 lbs. of chocolate, 20 lbs. of Trinidad cocoa, 20 lbs. of soluble cocoa, 20 lbs. of coffee, and 20 lbs. of chicory.

The fifth, of 20 lbs. of chocolate, 20 lbs. of Trinidad cocoa, 30 lbs. of soluble cocoa, and 30 lbs. of coffee.

The sixth, of 20 lbs. of Trinidad cocoa, 50 lbs. of soluble cocoa, and 30 lbs. of coffee.

The combinations may be mixed with "prepared cake" made of some of the following ingredients:—Virginia snake root, shavings of guiacum wood, camomile flowers, cassia, cinnamon, bitter almonds, treacle, ground rice, cloves, carraway seeds, wheat bran and flour, Peruvian bark, sassafras wood, rush nut, mustard seed, sugar, and water. The proportions are about 20 lbs. of cake (broken up and ground), 100. lbs of either combination, and 30 lbs. of sugar.

[Printed, 4*d*. No Drawings.]

A.D. 1854, July 8.—No. 1503.

TINDALL, Lorenzo.—"Improvements in bruising or re-"ducing grain or other substances." The mill described by the patentee "will most effectively grind" coffee as well as other substances. The principal working parts are (1) a horizontal bruising or crushing cylinder, and (2) a stationary "grain feeding and bruising bar." These parts are mounted on an iron base plate, which is bolted to the top of framework "of the usual kind."

The periphery of the cylinder is "formed with angular ribs "set ratchet-wise and parallel to the cylinder's axis;" the shaft or spindle revolves by means of a winch or other power in "journal pedestals" cast on the base plate. The cylinder is contained within a wooden case which rests on the base plate; the flat ends of the cylinder are "set to bear close up "to the opposite inner sides of the case." The hopper is placed above the case and opens into it "by a thoroughfare "extending across the entire width" of the case. The bruising or crushing bar "is formed with a smooth face at its "upper part, having an inclined curve towards the cylinder, "whilst at the bottom is a serrated plate or a row of teeth "projecting beyond the inclined face and reaching close up "to the cylinder." The bar is held tight in position by means of bolts and nuts, and is adjusted to the cylinder by thumbscrews.

As the cylinder rotates its ribs "successively carry down "portions" of the coffee, &c. "which cannot escape from the "curved recess of the bar;" the coffee, &c. is thus "brought "into forcible contact" with the teeth of the bar, and as these are set close up to the periphery of the cylinder, "each "individual grain is crushed and torn asunder" in passing through between the surfaces. To keep the cylinder clear of adhering particles a horizontal brush is fitted above it.

[Printed, 10*d*. Drawing.]

A.D. 1854, October 26.—No. 2284.

OLIVIER, Charles Henry.—(*A communication.*)—"An im-"proved apparatus for drying." A "dark and closed cham-"ber" is constructed of brickwork and provided with doors in front. In the chamber are rectangular steam cases, and covering the spaces between them are sheets of iron "to form "with them the platforms on which the matter to be dried is "placed." A second platform may be made by a second series of such cases, &c. At one extremity of the first case there is a tube through which steam is admitted; at the other end of the case there is another tube which communicates with the second case; similarly there is a continuous steam communication from case to case; and in the last case of the series there is a discharge tube. Each case has at each end a discharge tube and cock for letting off the condensation of the steam; and in the top of the chamber a tube carries out "all "the evaporation from the objects drying." A safety valve is required "in case it is necessary to work with the pressure "of the steam instead of the waste steam of a steam "engine."

To dry materials which do not require a very great heat, such as coffee, grain, &c., "flat curved pipes" are used; they are placed on iron cross pieces and covered with a thin sheet of iron, "under which all the heat of the pipes will produce" a temperate and equal heat.

Figures in the annexed sheet of drawings represent the tools for turning and drawing out the materials.

[Printed, 10*d*. Drawing.]

A.D. 1854, November 29.—No. 2507.

TAVERNER, JOHN.—(*Provisional protection only.*)—"A new "edible compound," consisting of farinaceous matter, sugar or saccharine matter, cacao, and flavouring essence if desired.

The following is the manufacture preferred by the inventor:—He adds to about two-thirds of wheaten flour and one-third of sugar, manna, or honey (or a mixture of the three) sufficient water to form a paste; he then flavours the paste (if desired), bakes it until it becomes hard "and assumes the colour of "ship biscuits," and then reduces it to powder. He grinds cacao, and during the process adds thereto the prepared powder in the proportion of about 5 parts of powder to 4 of cacao. The compound may be made into cakes if required.

Or the cacao may be boiled with any desired quantity of sugar, and the powder may be mixed in afterwards, when "a rich powder will be formed."

[Printed, 4*d*. No Drawings.]

A.D. 1854, December 22.—No. 2706.

LOYSEL, EDWARD.—"An improved apparatus for cooking "or preparing edible substances." This apparatus "may be "used for roasting coffee" and other matters; it is composed of "two dish-shaped vessels, which are hinged together "at one side and are provided at the opposite side with "handles." Each vessel is made inside with a perforated false bottom; one serves as a cover to the other when in use, the two being held together by means of the handles.

The coffee is laid on one of the false bottoms; the apparatus is placed on a fire and turned over when the coffee is roasted to a certain extent on one side.

[Printed, 10*d*. Drawing.]

1855.

A.D. 1855, January 4.—No. 26.

WATT, Charles.—(*Provisional protection only.*)—"An im-"provement in preparing coffee." The improvement consists in causing the berries "to be first cut, broken, or ground, and "then to be roasted;" by this method "greater uniformity "of roasting" is obtained.

[Printed, 4*d*. No Drawings.]

A.D. 1855, March 29—No. 696.

GILLOT, Marie Jeanne Thérèse and BEAUVAIS, Cécile Célestine.—"Improvements in purifying grain, vegetable or "botanical matter, and cochineal." This invention relates to "the treatment of damaged grain, &c.," and the improved treatment consists in washing the grain, &c. in cold water and then drying it rapidly and carefully.

After describing the process for purifying "rice, sago, "tapioca," the patentees state that as coffee is of a hard nature, it requires a longer washing than rice, &c., and sometimes a second washing, "because it has a tendency to retain "the salt and its bad taste."

In treating tea, so as to preserve its aroma, the washing must be done as rapidly as possible and in the coldest water. When the water is drained off, the tea is put "into a cold "infusion of violets," and when dried should be "stored in a "well-closed case."

[Printed, 4*d*. No Drawings.]

A.D. 1855, June 1.—No. 1254.

VENANT, Charles Isidore Constant.—"Improvements in "apparatus for roasting coffee and other substances." The first improvement consists in forming the roasting cylinder

" with a smaller concentric cylinder passing from end to " end," so that the coffee receives heat "radiating from the " centre of the cylinder as well as by external application." The shafts or spindles which carry the roasting cylinder are hollow; they communicate with the interior by means of channels; "spaces," one at each end, communicate with the small cylinder; heat rising from a furnace passes along under the roasting cylinder; thence into one of the spaces; thence through the small cylinder, the other space, and a channel "running along the back part of the cylinder casing." This outer casing is made in segments, so that the roasting cylinder may be withdrawn when required. Steam, &c. is carried off through the shaft which carries the winch handle.

The second improvement consists in mounting on one of the shafts or spindles " a second cylinder, in which the roasted " coffee is subjected to the action of the vapour or essence of " another parcel of coffee undergoing the process of roasting." Four tubes radiate from this shaft, and perforations in them " allow free emission of any vapours passing off from the " roasting cylinder." A disc at the end of a rod can be pushed up the shaft beyond the tubes when required.

The third consists in the employment of a perforated cylinder in which the coffee is dried before the roasting; it is connected by wheelwork to the shaft which carries the second cylinder.

[Printed, 10*d*. Drawing.]

A.D. 1855, June 21.—No. 1424.

BOUGEREAU, THEODORE. — "Improvements in apparatus " for roasting coffee." Instead of the ordinary roasting cylinder, the patentee uses a "spherical" vessel and mounts it so to have "a rotatory motion about a horizontal axis and " also at the same time a rotatory motion about a vertical " axis."

The sphere is mounted on trunnions, which turn in bearings attached to a ring. The ring is mounted on friction pulleys, which run in a groove in a circular frame; the frame is bolted on to uprights. On the upper surface of the ring are teeth, into which a toothed wheel works. Toothed wheels are fixed on the trunnions; these, as the sphere rotates, take into the teeth of a "circular fixed rack."

[Printed, 6*d*. Drawing.]

A.D. 1855, July 17.—No. 1602.

JENNER, WILLIAM. — (*Provisional protection only.*) — " An " improved beverage," or a " wholesome and nutritious " dietary article " to be used as a substitute for coffee. The inventor grinds or otherwise pulverises rice, then roasts it, and then adds to it about one-sixteenth part of chicory.

[Printed, 4*d*. No Drawings.]

A.D. 1855, July 26.—No 1698.

PONCELIN, THÉRÈSE ALEXANDRINE. — " Improvements in " treating or preparing coffee." This invention relates to " distilling roasted coffee " so as to obtain a " liquid, pale, " limpid, volatile aroma " and other products ; also to treating roasted coffee in such manner as to obtain " a fixed solid " basis, of deep brown colour, soluble in water."

The preferable mode of obtaining the aroma is to put newly roasted coffee, (ground or not but perfectly dry) into a retort and submit it for 24 hours to a heat of not more than 200° in " a hot-oil bath." The liquid aroma " requires being decanted " after a fortnight."

To obtain the solid basis, boil the roasted coffee (ground or not) in water ; filter ; evaporate on an open fire in large pans until of a syrupy consistency ; then put the syrup into " a " porcelain capsule still kept on open fire ;" stir it until it is " converted into a paste," and then spread it on a marble table, and cut it up into pieces.

[Printed, 4*d*. No Drawings.]

A.D. 1855, August 18.—No. 1877.

SAVAGE, ALFRED. — " Improvements in the means or " mechanism for treating tea, sugar, coffee, chicory, and such " substances as require the processes of separation, reduction " of size, and mixing, or any one or two thereof." The improvements consist of various " means or mechanism," which may be added to the machine known as " Savage's " noiseless machine," so as to form " one compact article, " thus saving space in grocers' and other shops."

1. " Separating tea and other substances and reducing the " size of part thereof:"—The mechanism " for sifting and " cutting " is placed above the mixing vessel.

2. Mixing tea:—The apparatus for sifting and cutting is removable so that it can be lifted off from the mixing vessel.

3. "A feed apparatus:"—An inclined surface has attached to it "one or more magnets;" the tea, coffee, and other substances, are caused to pass over the surface "at such rate as "will allow the magnet or magnets to retain the iron mingled "with the said substances."

4. "The exterior and interior" of the mechanism mentioned in No. 1 are so connected as "to allow a substance "which obstructs its motion to pass without removing such "obstructing substance out of the case which contains the "said combined apparatus."

5. "A revolving sieve" is placed under a vessel used for roasting coffee and other substances, so that the contents of the roaster may be emptied into the sieve; the roaster and the sieve are geared together.

6. A brush is connected externally to the sieve, so that the meshes may be swept during their rotation.

7. "An interior shaft, having suitable projections thereon," is combined with a rotating vessel for the purpose of mixing teas.

8. This improvement relates to "chopping loaf sugar."

9. In steel mills for grinding coffee, &c., "the contrivance "used to communicate motion" is placed on "the bush or "bearing" and is connected with the spindle "by an ordinary clutch."

10. The part which supports the grinding portions of such mills and the standard or flange which supports the mill are formed of "one piece of material."

11. The parts of such mills, "termed cores and cases," are made of cast iron covered with wrought iron, "having the "teeth by which the grinding is effected formed therein."

12. The grinding parts of mills "with flat or nearly flat" surfaces, termed "plate mills," are made "in the form of "segments or annuli of wrought iron affixed to masses of "cast iron."

The patentee does not limit himself to the foregoing "details of construction" or to any "particular materials."

[Printed, 4*d*. No Drawings.]

A.D. 1855, September 11.—No. 2056.

LEBAIGUE, François Honoré.—"An improvement in the "manufacture of chocolate." The improvement consists in mixing or grinding cod liver oil with chocolate, usually about 25 per cent. by weight of the best quality of the oil. The compound is made into form in moulds. Flavouring and other matters and when desired, "other medicals," may be added to the compound.

[Printed, 4*d*. No Drawings.]

A.D. 1855, September 27.—No. 2157.

THÉRY, Charles Victor.—"A new preparation of coffee." The coffee is roasted and ground with about an equal quantity of sugar. There is then added butter of cocoa or other suitable fatty substance, about 3 parts of butter to 5 of coffee, and the mixture is rolled on a stone moderately heated until "it acquires a semi-liquid pasty consistency." After this twice as much sugar as before is added; the rolling is continued until "the paste becomes soft and yielding;" and finally the paste is poured into moulds and left to harden.

To prepare coffee "as a sweetmeat," roll together about 50 oz. of coffee, 20 oz. of sugar, and 8 oz. of butter of cocoa; add thereto "a warm infusion of coffee equal in weight to the "ground coffee, with about four times as much sugar." Let the mixture simmer in a water bath for about 3 hours; add another warm infusion and a little sugar; let the whole simmer for 2 hours, and when cool pour it into jars (which should be tightly stoppered) or make it up into balls or lozenges. Flavouring ingredients may be put in during the preparation.

[Printed, 4*d*. No Drawings.]

A.D. 1855, November 22.—No. 2631.

ROBERTS, John, junior.—"A machine or apparatus for "cooling tobacco during the process of manufacture." This apparatus may be used for cooling coffee. A tray or receptacle is supported on standards on the top of a frame. Within the frame is a case containing a fan, and having concentric openings in the sides for the admission of air. The top of the case is formed into a tube "passing through the lower portion of "the tray," and over the tube is "a perforated plate or "spreader supported on feet for the purpose of diffusing the "draught." The substance to be cooled is placed on wire gauze or a perforated partition which is mounted on a frame, so that it may be readily put into the tray or taken out of it. A space is to be left between the gauze and the spreader, in order that cold air may circulate freely through the substance. The fan is caused to revolve rapidly "by the aid of multiplying "wheels and strap gear."

[Printed, 6*d*. Drawing.]

A.D. 1855, December 1.—No. 2710.

GARDNER, John.—(*Provisional protection only.*)—"A method "of treating tea for economizing its use and transport." The tea is reduced by ordinary mechanical means to a powder more or less fine, and is then pressed "into suitable forms or "cakes for packing and carriage."

[Printed, 4*d*. No Drawings.]

A.D. 1855, December 28.—No. 2933.

ROBERT, Jean Jules.—(*Provisional protection only.*)—"The "fabrication of torrefied beet root to supersede chicory as "used in coffee." The beet root is cut into pieces of about the size of coffee berries; it is then gently roasted in an oven in a closely shut vessel, and when nearly done, "a certain "quantity of fine oil or of good fresh butter" is added "to "hinder the evaporation of the sweetness and aroma." When the whole is sufficiently roasted, it is ground like coffee and is then fit for use.

[Printed, 4*d*. No Drawings.]

1856.

A.D. 1856, January 26.—No. 212.

GARDNER, Edward Vincent.—"Improvements in heating, "drying, desiccating, and evaporating." The apparatus described is applicable to "desiccating coffee, sugar, &c.;" it is composed of (1) a furnace supported on brickwork; (2) a casing containing plates "which serve to direct the heated

" products;" (3) iron chambers fixed in the casing, one above the other and open at each side, so that they can be heated " by the heated products from the furnace passing around " them;" (4) additions to parts according to the use to which the apparatus is to be applied.

When the apparatus is intended for desiccating coffee, an outer casing is required. Rollers are placed at each end of the chambers, and over each pair an endless band of wire gauze is caused to travel. Sloping plates direct the coffee as it passes from one band to the next, and scrapers clear the bands. The coffee is introduced through a hopper; the bands convey it "successively through all the heated chambers," and it is discharged from the lowest.

[Printed, 10*d*. Drawing.]

A.D. 1856, February 7.—No. 334.

BERLETTE, Henry. — (*Provisional protection only.*) — " An " improved apparatus for roasting coffee." This invention consists in using " closed cylindrical chambers or vessels in " place of open ones." Two such cylinders are mounted one above the other, and revolve by means of " tooth and pinion " gear." The upper cylinder (in which the coffee is roasted) is of metal; the lower one (in which the coffee is placed after the roasting "for being impregnated with the essence or " aroma") is of metal but lined with wood. A pipe, " com- " municating by hollow trunnions to the interior" of each cylinder, is secured to the frame of the apparatus, and the essence or aroma passes thereby from the upper to the lower cylinder.

[Printed, 4*d*. No Drawings.]

A.D. 1856, February 28.—No. 509.

WESTHORP, Isaac.—(*A communication from Gail Borden.*)— " Improvements in concentrating milk and in obtaining " concentrated extracts from tea, coffee, and chocolate." The principal parts of the apparatus employed for concentrating milk are (1) " a vacuum reservoir" in which the milk is kept in vacuo until it is let into (2) " a vacuum boiler" for concentrating the milk out of contact with the atmosphere; (3) "a vacuum receiving vessel below and in connection " with the boiler;" (4) an air pump.

For obtaining concentrated extracts of tea, coffee, and cocoa, additional vessels are required, namely "a vacuum " reservoir" in connection with and between "a series of " extract filtering vessels or displacers" and the boiler. The filtering vessels are so constructed that the lower surface of each will form an air-tight joint with the upper surface of the others, and thus bring the upper vessels "under the " control of the vacuum." The Specification contains a list of the pipes, &c. required for connecting the vessels to each other and to the air-pump.

The substance from which the strength is to be extracted " is placed upon a diaphragm fitted within each" filterer; boiling water (but by preference heated fresh milk) is poured on the substance; when "sufficiently steeped," the connection between the filterers and the vacuum (or extract) reservoir is opened, and the fluid "by the operation of the vacuum" is forced through the substance.

In the preparation of coffee the proportions are usually 4 parts (in weight) of sugar, 16 of milk "to be reduced 80 per " cent.," and 5 of ground coffee; in the preparation of chocolate 6 parts of "finely prepared melted cocoa," 7 or 8 (in weight) of the concentrated milk, and a like quantity of sugar; and for the extract of tea, 2 parts of tea, 3 of sugar, and 5 (in weight) of milk "previous to concentration." In procuring the extract of tea, the filterer (in combination with the extract reservoir) is connected "with some known method " of expressing the liquid strength of the tea after proper " maceration in a separate and covered vessel."

All the vessels to which heat is applied "are fitted with " double bottoms" for the purpose of heating by steam or cooling by means of cold water. "After a sufficient concen" tration the extract should be thoroughly cooled."

[Printed, 10*d*. Drawing.]

A.D. 1856, April 5.—No. 829.

STURLEY, HENRY THOMAS.—"An improved compound or " breakfast mixture." The ingredients of this compound are malt, rice, and chicory. 112 lbs. of roasted malt, 112 lbs. of roasted chicory, and 56 lbs. of roasted rice, are dried, separately ground, and sifted; they are then thoroughly mixed together, and the compound is made up into packages. The proportions may be varied, but the patentee prefers "in all "cases having the malt and chicory in about equal propor- "tions."

The compound is mixed with boiling water or boiled in water and sweetened according to taste.

[Printed, 4*d*. No Drawings.]

A.D. 1856, November 6.—No. 2613.

PARKER, JOSEPH.—(*Provisional protection only.*)—"Improve- "ments in machinery or apparatus for roasting coffee or for "other similar purposes." The cylinder revolves in bearings in arms which are fixed to one or more uprights, "so as to "present the form of a quadrant," and the upright (or uprights) "moves upon a pivot at its lower extremity," so as to take the cylinder to or from the fire, "moving in the circle "described by the quadrant, having the pivot for its centre." On the inner surface of the cylinder are scoops, which, as the cylinder revolves, cause the coffee to fall in such manner that the portion "laid upon the hot cylinder in one compart- "ment shall be uppermost in the next." A hollow perforated axle runs through the cylinder; at each end is a tap which is kept open during the process of roasting to allow the escape of steam, &c. One end of the axle may be so contrived as to be drawn out from the other end; it is made in the shape of a scoop, so that a sample may be examined without opening the cylinder.

[Printed, 4*d*. No Drawings.]

A.D. 1856, December 8.—No. 2911.

BURWELL, EDWARD.—"An improvement in roasters for "coffee, cocoa, chicory, and similar substances." The improvement consists in making the ends of the roasting cylinder of wire gauze or of perforated zinc or other metal.

Two rings are mounted on the shaft or axle. These rings have each two flanges; to the outer ones is fixed a cylinder without perforations; and to the inner ones a cylinder of wire gauze. The ends above-mentioned are "fixed to the "inner faces of the rings." The inner cylinder may be formed "of sheet metal without perforations," or it "may be "entirely dispensed with."

[Printed, 6*d*. Drawing.]

1857.

A.D. 1857, January 21.—No. 180.

KITELEE, Thomas.—"An improved combination of ingredients to be employed as a breakfast powder or article of "diet." The ingredients are either malt and coffee or chicory, or malt, coffee, and chicory.

Each ingredient is ground to a very fine powder before mixing them together. The proportions preferred are $\frac{2}{4}$ of ground malt; $\frac{1}{4}$ of ground coffee; and $\frac{1}{4}$ of ground chicory; or $\frac{1}{2}$ of ground malt and $\frac{1}{2}$ of ground coffee or chicory.

[Printed, 4*d*. No Drawings.]

A D. 1857, January 30.—No. 283.

AFFLECK, Thomas.—"Improvements in machinery or apparatus for pulping coffee." The patentee claims, "the placing "of the drum or cylinder of coffee-pulping machines, having "a toothed or grater surface, with its axis in a vertical "position, by which arrangement a series of chops or operating "edges may be arranged round it."

The drum revolves between two plates which are bolted to four uprights; the upper end of the axle works in a bearing formed by a disc, "which is secured in a hole formed in the "upper plate, the hole being rather larger in diameter than "the drum" to admit of its removal &c. without disturbing the framing. Round the drum and extending between the plates are arranged "duplicate parts," varying in number according to the size of the drum; "four sets of chops" are represented in the annexed drawing. Each set of parts "form three chambers;" the lower side of one of the outside ones is closed, but its upper end communicates (by means of a hole in the upper plate) with a hopper. The lower ends of the other chambers are open, so that (holes being made in the lower plate) all matters coming into the middle chamber "may drop on to a sieve," and all matters left in the other outside chamber "may be conducted away by suitable pipes." The lower chop is adjustable so as to be as close as possible to the grater surface without touching it, and the upper chop so as to be at a suitable distance from the lower chop and the grater surface. The arrangement of the side chambers

" allows of ready removal to get at the chops." The sieve is hung so as to " permit of the proper riddling motion being " imparted " to it. The sides of the hopper or cistern " descend " below its bottom " and rest upon the top of the upper plate, thus " forming a cover and protection to the shafting and " gearing." In the hopper are four tubes " placed vertically " over the first-mentioned chambers, one tube communicating with each chamber.

Perfectly pulped berries will pass through the sieve; the imperfectly pulped ones together with some pulpy matter will remain on the surface of the sieve and " will be delivered " into a suitable receptacle," from which they may be carried back to the hopper in buckets or lifters attached to an endless belt or chain.

The arrangement of the parts and the working of the machine are detailed in the Specification, but the patentee does not limit himself to the details therein given.

[Printed, 10*d*. Drawing.]

A.D. 1857, February 26.—No. 567.

EDWARDS, Joseph Slatterie.—" The preparation and novel " application of a certain foreign fruit or vegetable as an " article of food, confectionery, or to be used in brewing or " distilling, or for the manufacture of sugar and gum." This fruit or vegetable is the " Ceratonia siliqua, commonly known " as the carob or locust pod." The pods are roasted, baked, or otherwise dried by heat; they are then ground; the meal is sifted and mixed (or not) with syrup (obtained from the pods by grinding, mixing with water, pressing, and evaporating); finally the meal is reduced to a fine powder, which may be used " instead of coffee, chocolate, or cocoa."

[Printed, 4*d*. No Drawings.]

A.D. 1857, March 26.—No. 849.

BUTLER, Augustus Frederick.—(*Letters Patent void for want of Final Specification.*) — " Improvements in machinery for " pulping coffee." Two rollers grooved longitudinally revolve at a short distance from each other. Between the rollers and " just over their line of centres " blocks are placed; these " fill up the space between the two rollers at those parts " where they are placed," namely at equal distances apart from end to end of the rollers; their upper ends are attached to a bar which passes from side to side of the machine. Between the rollers and "just under the line of centres" another bar passes from side to side of the machino; it "fills "up the space between the two rollers except at certain places "where the bar is notched away." One of these notches comes under each of the blocks.

The coffee is fed by a feeding roller into the spaces unoccupied by the blocks; in passing between the rollers "it "has a portion of the skin removed;" but being prevented from at once escaping by the bottom bar, "it has first to "traverse sideways until it arrives at one of the notches," and by this time "the whole of the skin is removed." The berries "are conducted away by one hopper," and the skins "are received by others."

[Printed, 4*d*. No Drawings.]

A.D. 1857, May 15.—No. 1374.

WALKER, Robert Porter.—"Improvements in machinery "for hulling and scouring coffee and similar substances." The frame carrying the working parts is enclosed at the sides and bottom, forming a receptacle for dust, &c. On the main shaft (which revolves in bearings on the frame) are "heads" receiving an inner cylinder, which is usually polygonal in shape and covered with wire netting; the ends of the cylinder are metal discs to prevent the coffee from getting inside. On the cylinder are secured "beaters" and "flights;" the former are small frames "receiving small metallic plates set at an "inclination to the surface" of the cylinder and having a "rasping surface;" the latter are of metal roughened and set in an "angular position to the shaft" so as to "either "accelerate or retard the delivery of the coffee." An outer cylinder is formed of wire netting within a "circular supporting frame" and between two heads. These heads have hollow journals which surround the main shaft, so that the cylinder may be rotated by means of a belt in a direction opposite to that of the inner one. In one of the heads there is a circular opening, through which the coffee is poured into the space between the cylinders from the shoot of a hopper.

"The fine refuse particles" fall through the outer cylinder into the receptacle below, and "the coffee and hulls pass out "at the delivery end from between the cylinders."

To avoid inconvenience from the dust flying about "a "suction blower" is employed. The machine is fitted with a semicylindrical casing and a semicircular end piece; a fan draws away the air out of the space thus enclosed, and from the receptacle by connecting a trunk therefrom with the blower. The blast may be brought "across the machine" and so be used "to winnow or partially winnow the hulls "from the coffee."

[Printed, 8*d*. Drawing.]

A.D. 1857, June 29.—No. 1815.

NYE, Samuel.—"Improvements in mills for grinding coffee, "pepper, spices, and other substances." This mill is composed of an outer cone having its inner surface serrated, and an inner cone having its outer surface serrated; the inner cone revolves within the outer one by means of a winch. The cones are enclosed in a stand, which is provided "with a "cramp and thumbscrew" (either attached to or separate from the stand) for fixing it to a table or other place. In the middle of the stand is a regulating screw.

[Printed, 8*d*. Drawings.]

A.D. 1857, August 13.—No. 2156.

COLLINGRIDGE, Henry. — (*Provisional protection only.*)— "Improvements in separating metallic substances from coffee, "and in the apparatus employed for the purpose." The apparatus consists of an inclined trough or slide carrying on its surface "a number of magnets or electro-magnets." As the coffee falls down the trough, the magnets attract the metallic substances and retain them, while the coffee descends into a receptacle.

[Printed, 4*d*. No Drawings.]

A.D. 1857, October 13.—No. 2611.

NEWTON, William Edward.—(*A communication from Joseph Maurice Gauthier.*)—(*Provisional protection only.*)—"Improved "apparatus for roasting or torrefying coffee or other sub-"stances." A rectangular or other shaped case is divided by a partition into two compartments. One compartment contains the apparatus for roasting, namely "a conical vessel, at "the small or lower end of which the fireplace is situated,' and a revolving vessel (of any shape) to hold the coffee, mounted over the fireplace. Over the revolving vessel "is " adapted a bell-shaped or trumpet-mouthed pipe," the smaller end being " bent over like the neck of a still head;" this end terminates in an opening made for its reception in the other compartment. The aroma from the roasting coffee will pass into this compartment, which may be charged with raw or roasted coffee. The products of combustion from the fire pass off by a flue at the back of the first compartment.

[Printed, 4*d*. No Drawings.]

A.D. 1857, November 5.—No. 2809.

ROBINSON, George.—(*Provisional protection only.*) — "Im- " provements in apparatus for shelling or hulling coffee and " other berries and seeds." A beater revolves in a cylinder of woven wire, and it is preferred " to place the axis of the " beater horizontal." A number of beaters are " supported on " arms from the axis in a position parallel to the cylindrical " part, and in more or less close proximity thereto," according to the berries to be operated upon. The berries are fed in " along the upper part " of the cylinder and escape " near the " lower part;" during their descent, they are acted on by rapid rotatory motion communicated to the beaters.

[Printed, 4*d*. No Drawings.]

A.D. 1857, November 23.—No. 2929.

RILEY, Samuel.—" An improvement in the preparation of " chocolate and cocoa." The improvement consists " in the " application of lentils " in the manufacture of chocolate and cocoa. The seeds may be used in the form of a decoction, or of a paste, or (by preference) of flour or powder. The following ingredients and proportions are " most extensively used ; " they may however be varied; all the proportions are " by " weight."

First preparation :—4 parts of lentil flour ; 1 of sugar or saccharine matter ; 11 of cocoa reduced to powder.

Second :—4 parts of lentil flour ; 2 of sugar or saccharine matter ; 1 of the flour of sago, tapioca, rice, or arrowroot ; 9 of cocoa reduced to powder.

Third :—4 parts of lentil flour ; 2 of sugar or saccharine matter; 2 of the flour of sago, tapioca, rice, or arrowroot; 8 of cocoa reduced to powder.

The ingredients are mixed together, ground, and sifted through a fine sieve.

[Printed, 4*d*. No Drawings.]

A.D. 1857, November 24.—No. 2941.

BUTLER, Augustus Frederick.—"Improvements in machinery for pulping coffee." Two pulping drums (one considerably smaller than the other) are mounted on parallel axes; they are caused to revolve by toothed wheels geared together and by a crank handle; the smaller one is capable of adjustment as to distance from the larger one; and each is "formed with angular projections or teeth running from end "to end." The berries are put into an "inclined hopper" and are fed into the machine by a fluted roller, which revolves (being connected by an endless band to the larger drum) at a short distance above the inclined surface of the hopper and is adjustable as to distance therefrom. The supply from the hopper is also regulated "by an adjustable slide."

The berries are fed in between the drums "at several points "ranging from end to end" and are prevented from descending between the drums at other points by means of stops. These stops are screwed to the under side of a plate and "descend "between and over the surfaces of the drums, so as to prevent the berries descending between the drums at those "parts." The berries, whilst being acted upon by the drums, are supported and prevented from falling through the space between the drums by a "hollow bar" adjustable as to distance between it and the underside of the stops. Under each of the stops the upper surface of the bar is notched or cut away to form apertures for the escape of the berries when they become freed from the pulp; and their escape is facilitated by a stream of water which passes over the surface of the larger drum "under each of the stops." The pulp is conducted away on each side of the bar by "inclines."

[Printed, 1*s*. 4*d*. Drawings.]

1858.

A.D. 1858, January 23.—No. 127.

GORDON, JOHN.—" Improvements in machinery or apparatus for pulping coffee." The patentee claims the invention of a machine in which a cylinder, " made uneven on the " surface by spiral grooves " or " chequered," works against " a breast with inclined recesses or grooves."

One set of figures in the annexed sheet of drawings represent the cylinder mounted horizontally. The grooves are cut " of the same angle as the angle of the projecting edges " on the concave side of the breast. Grooves are cut on the concave side of the breast; " points of the breast " extend over the cylinder " so as to guide the cherry coffee into the " grooves ; " openings at the bottom of the grooves allow of the escape of the pulped berries; and there is a " projecting " edge on the lower side " of each groove, over which the pulp " is drawn by the action of the uneven surface " of the cylinder " after having been squeezed out." The ends of the breast pass through the side framing of the machine; they are acted on by set screws " against wooden wedges," so as to keep the breast steady and in its place. A " back board " conducts the pulp away after it falls from the breast; and a hopper fixed to the side framing holds the cherry coffee.

Another set represent the cylinder mounted vertically, and another set represent it vertical, but with the machine " inverted;" in the former of these arrangements the hopper is circular and formed by the cylinder and the breast; in the latter, the machine is " fed from the centre."

[Printed, 6*d*. Drawing.]

A.D. 1858, February 17.—No. 301.

BAKER, GEORGE, and BAKER, JOHN EDWARD.—" New or " improved machinery for compressing and moulding powders " and pastes." This machinery is useful for the compression of cocoa and the formation of " coherent cakes " thereof.

A revolving wheel or drum has formed in its periphery a series of moulds or dies; each is provided with a plunger " sliding radially " in it ; and " the tops of the plungers

" constitute the bottoms" of the moulds. Each plunger " carries a roller at its bottom." The moulds are filled as they pass under the open bottom of a hopper; when filled, they pass from under the hopper and are brought against a " fixed break or bearing," against which the powder or paste is compressed or moulded by the plungers.

The plungers are actuated in the following manner:—A cam " having no rotation " is situated on the axle of the wheel, its outer surface being " nearly but not quite concentric " with the wheel. As the wheel revolves, each plunger passes over a " raised part " of the cam, " ascends in the mould " and compresses the contents between its upper end and the break. On arriving at another raised part, each plunger again moves and pushes out the compressed cake from its mould on to an endless band. The plungers, before being withdrawn again into the moulds, pass a brush which removes any adhering particles. The return motion of the plungers and the keeping of them to their bearings on the cam are effected by means of an endless chain which passes round the rollers or by means of springs. " Each of the rollers has to pass under a fixed stop," which causes the return motion of the plungers, if the motion has not been effected by the chain.

The break is provided with " a nearly flat steel plate," which may be removed when required.

[Printed, 8*d*. Drawing.]

A.D. 1858, July 10.—No. 1556.

WATSON, John Forbes and FADEUILHE, Valentin Bernard.—(*Letters Patent void for want of Final Specification.*)— " Improvements in the preparation of cocoa and chocolate, " and also of nutritive compounds from the seeds of the plants " called Soja hispida and Cicer arietinum." The cocoa or chocolate is mixed with the substance " now prepared and sold " as dried milk," so that a hard cake convertible into powder is obtained.

The flour produced from the seeds of the Soja and the Cicer is combined with cocoa or chocolate and dried milk, or either of them with dried milk or with the juices of meat.

[Printed, 4*d*. No Drawings.]

A.D. 1858, August 23.—No. 1915.

AVERILL, Thomas.—(*A communication.*)—" Improvements in " mills for grinding." The grinding surfaces consist of a series of corrugated, grooved, or otherwise roughened plates, alternately fixed and moveable, so that each moveable one works between a pair of fixed ones. The moveable plates are supported near the middle of their upper edges by a pin which passes through a slot in each; they are drawn to and fro upon the pin by means of an axle and crank, and they have also " an oscillating motion " about the pin in consequence of " the " alternate elevation and depression " of those ends which are connected to the crank. The fixed plates are supported by the pin, by another pin below, and " on the tops of the legs of " the machine." The lower edges of the slots are notched; the upper edges of the plates, namely " the edges immediately " below the slots," are the thinnest parts; and the plates gradually thicken downwards, whilst the parts constituting the ribs or projections are of uniform thickness. A set screw regulates the distance between the plates. The substance to be ground descends from a hopper, and passing through a passage and the slots falls between the plates.

This mill, adapted " for grinding generally," may be " advantageously employed for grinding coffee."

[Printed, 6*d*. Drawing]

A.D. 1858, December 8.—No. 2816.

KING, William, the younger.—(*Provisional protection only.*) —" Improvements in apparatus for roasting coffee and other " substances." The improvements consist in making the roasting cylinder of wire gauze or metal net work or perforated plate, and in fitting through one of the arms on which the cylinder rotates a testing tube, so that a sample may be taken out without stopping the cylinder.

[Printed, 4*d*. No Drawings.]

1859.

A.D. 1859, February 8.—No. 354.

ROWNTREE, Robert Ritson.—(*Provisional protection only.*) "A portable tea testing apparatus." A case encloses (1) a vessel for containing water; (2) a gas burner and stand; (3) cups and pots fitting one within another; (4) a spoon; (5) a length of elastic tubing for communicating with a gas burner.

[Printed, 4*d*. No Drawings.]

A.D. 1859, February 11.—No. 382.

BILLING, MARTIN, and KLOEN, WILLIAM. — (*Provisional protection only.*)—" A method of and apparatus for decolouriz-" ing tea," namely by exposing it to the action of steam in an apparatus of the following construction:—A cylinder of sheet metal is made with a partition whereon water is put, and under which heat can be applied. Above the water is placed a perforated support for the tea; the steam passes through the perforations and acts upon the tea. A rotating stirrer stirs the tea and causes it to descend through a channel in the side of the cylinder into another cylinder, in which it falls upon a heated plate. In this cylinder the tea is heated and dried, stirred by a rotating stirrer, and caused to pass down a channel in the side into a receptacle.

[Printed, 4*d*. No Drawings.]

A.D. 1859, April 30.—No. 1085.

FRANCIS, EDWARD. — " Improved apparatus applicable to " the treatment of tea, and other useful purposes." This apparatus " is adopted to breaking and sifting tea, dressing seeds, " disintegrating chicory," &c.

A horizontal sieve, having a circular side (solid or perforated), is mounted on a frame on transverse bars. A vertical shaft, carrying horizontal radial arms, passes through the sieve; its top passes through the boss of a mitre wheel from which it receives rotating motion; at its lower end is a spiral spring which allows it to work up and down through the boss when the arms come into contact with any " foreign substance " which may have accidentally found its way " into the apparatus. The arms are (by preference) flat and placed " at an angle " (of say about 60°) to the bottom " of the sieve; the distance may be regulated; they may have a tongue of leather or other suitable substance fitted to their lower edges; or they may be covered with soft leather, cloth or other fabric; or they may be fitted with brushes. All the parts are enclosed in a cover to confine the dust, &c., and below the sieve is a drawer or other receptacle into which the tea, &c. falls. The hopper has (by preference) " a slide in the throat thereof" for regulating the supply; sometimes it is placed at a short distance off and connected by a shoot whereto " a vibratory motion " is imparted; and sometimes the underside of the shoot is constructed to form a sieve, so that the smaller particles may descend from it into a receptacle.

The apparatus admits of modifications :—A suitably constructed " horizontal revolving wheel" may be substituted for the radial arms. The sieve may revolve and the arms be stationary or revolve in the opposite direction. " A reciprocating motion " may be given to the sieve or arms or both. The sieve may be mounted so that " it will yield downwards " upon an undue pressure being applied to its upper surface."

[Printed, 8*d*. Drawing.]

A,D. 1859, August 4.—No. 1799.

BROOMAN, Richard Archibald.—(*A communication from Joseph Poole Pirsson.*)—" Improvements in mills for grinding " coffee, corn, and other substances." An outer case encloses " two conical grinding cavities or beds grooved or cut in the " usual manner;" one cavity is placed directly over the other, " the bases being on reversed or opposite sides." Two grinders of the ordinary construction turn on separate shafts, and the shafts are geared together by a wheel and pinion of such comparative sizes that the speed of the lower grinder is about twice that of the upper one. The upper grinder (called the cracker) is " permanently set so coarsely as merely to break " or crack up the coffee;" the lower one is regulated by an adjusting screw for grinding to any required degree of fineness. The hopper and the delivery shoot are of the ordinary construction.

[Printed, 10*d*. Drawings.]

A.D. 1859, August 26.—No. 1949.

BOUTET, Charles Thomas.—(*Provisional protection only.*)— " A new mechanical mill, proper for milling every sort of " grains, dried or torrefied, such as coffee and cocoa." This mill consists of (1) "six iron pestles;" (2) two iron cross bars "used as guides for each pestle" and two iron plates to fix the guides; (3) "six circular notches for raising the pestles;" (4) a "grating" having an iron plate "perforated in order to "make a sieve, in which passes the bruised grain;" (5) two cylinders "for milling the grain into powder," two thin plates "for conducting the grain between the cylinders," and a screw "which tightens or loosens" the cylinders; (6) a case in which the apparatus is mounted, a hopper, and a drawer for the reception of the ground matter; (7) gearing, which transmits motion "by the means of the circular notches fixed on two "parallel axes" and which causes the cylinders to turn.

This mill is "at once a bruiser and a miller put in motion by "a single movement."

[Printed, 4*d*. No Drawings.]

A.D. 1859, October 19.—No. 2389.

GORDON, JOHN.—"Improvements in machinery or apparatus for pulping coffee." This invention, stated by the patentee to be an improvement on the one for which he obtained Letters Patent dated 23rd of January 1858, No. 127, relates to the "construction of the pulping cylinder" and to the mode "of fixing the covering" on the cylinder and "more accurately adjusting" the cylinder and the breast.

"The metallic pulper barrel" of the cylinder is made in two pieces, that is "with a loose piece or stave which is raised up "by a wedge at each end." The barrel has "a raised ridge "or ring" round each end, and the rings are "to fit close to "the breast." The cover of the barrel is placed between the rings; "the stave is then raised to the true circle" and secured by the wedges; and screws pass through the stave and wedges "into a flange on the barrel end." The cylinder is now "ready for work."

The patentee claims also the right of using raised rings "as "an improvement on the wood pulper barrels at present in "use."

[Printed, 6*d*. Drawing.]

1860.

A.D. 1860, March 29.—No 809.

FARMER, James.—" Improvements in the manufacture of " cocoa and chocolate." The first improvement consists in manufacturing cocoa and chocolate " without the use of any " farinaceous or colouring matter whatever ;" the second in mixing ground cocoa or chocolate with " a preparation of Irish " or Carrigeen moss, or of Iceland moss," or other similar " gelatinous preparation," or a combination of any such preparations. Isinglass or gelatine may be used instead of moss, but " moss is preferable.'

The moss, freed from all impurities and saline properties and thoroughly washed in cold water, is boiled in water (about 4 lbs. of moss in about 15 gallons of water), and the solution when cold " will form a strong jelly." The jelly is cleared by filtration, sweetened with sugar, and mixed with the cocoa or chocolate " into a paste of a suitable consistency." The paste is subsequently dried and " prepared for the market " in the usual way."

[Printed, 4*d*. No Drawings.]

A.D. 1860, April 16.—No. 948.

BROGLIA, Charles, and POUCHAUT, Pedro.—(*Provisional protection only.*)—" An improved apparatus to be employed in " the roasting and preparation of coffee, cocoa, and chicory." These articles are roasted in " closed cylindrical chambers or " vessels in place of open ones."

Two cylinders are mounted horizontally one above the other ; they revolve " through the intervention of tooth and pinion " gear ;" and moveable tubes communicate " by hollow trunnions " with the interior of each cylinder.

The coffee is roasted in the upper cylinder ; " the essence or " aroma " is transmitted to the lower one ; and the coffee when roasted is transferred to the lower cylinder " for the reception " of the aroma."

[Printed, 4*d*. No Drawings.]

A.D. 1860, July 9.—No. 1646.

WARNECK, Léopold Christian.—(*Provisional protection only.*) —" An improved method of treating the coffee husk for pur-

" poses of nutrition." The inventor proposes to utilise the husks of the coffee berry by roasting and grinding them and using the powder as a substitute for coffee or for chicory. Or the berry and the husk may be ground together " to augment " the quantity of coffee." Or the powder obtained may be mixed " with other wholesome substances calculated to render " it more agreeable to the palate." In some cases he proposes to mix with the powder " a certain quantity of gentian, " which will communicate a slight bitterness and increase its " hygeian properties."

[Printed, 4*d*. No Drawings.]

A.D. 1860, August 6.—No. 1899.

DE MORNAY, Henry.—" Improvements in apparatus for " sorting and preparing tea for the market." The patentee claims (1) an apparatus for winnowing or sorting tea " according to the qualities of the leaves;" (2) an apparatus for sifting tea; (3) an apparatus for drying tea.

1. This consists of " an air trunk provided at one end with " a fan for throwing a blast of air against a descending " stream " of tea. The trunk is fitted at its under side with a series of fixed shoots " so arranged that there shall be no lodgment for tea" in it. " In advance" of the shoots is a shoot with an adjustable sliding bottom, so that there may be taken out " a less or greater portion of the tea of the first " quality as may be found expedient." The trunk is sufficiently elevated to allow of a series of trucks, each carrying four chests, " being passed clear of the shoots to receive the " tea as it is discharged in an assorted state." Above the framing which supports the trunk is another framing carrying the feeding apparatus, namely a hopper, a guiding shoot, a slowly rotating grooved roller below the shoot, and below the roller an adjustable shoot whence the tea falls through an opening in the trunk. The tea descends in a thin broad stream, comes within the action of the blast, is driven forwards, and is assorted " according to its specific gravity;" it falls into the shoots and thence into the chests, while the dust is driven to the end of the trunk and " discharged into the last " chest of the series."

2. The preferable arrangement of apparatus consists of an endless sheet of perforated metal carried by two drums, which

while rotating "receive a sudden up and down or jogging "motion" by being "each supported by their bosses on a "pair of tappet wheels keyed to transverse shafts." Two brushes, one on each side, prevent the tea from falling over the edges of the sheet. The sheet is pierced with "elongated "holes arranged in a manner that will afford the utmost "facility for the passage of the tea through them." The feeding apparatus is similar to that in the winnowing machine. To effectually sift the tea it is necessary to employ more machines than one, having holes "different in size and gra-"duated to suit the different qualities to be separated." An inclined shoot, extending from one drum to the other conducts the tea that falls through out of the machine; and the tea which is too large to pass through is carried by the sheet and discharged at the end.

3. In the apparatus for drying a closed chamber is divided into three horizontal compartments, and in each at opposite ends two rollers are mounted for holding at tension an endless apron which is supported on bearing rollers. At the top of the uppermost compartment is an opening through which the tea descends from a feeding apparatus similar to that in the winnowing machine. The tea, carried on the apron to the end of the compartment is discharged through a shoot on to the apron below; it is carried through the middle compartment, thence discharged through a shoot on to the apron in the lowest compartment, and effectually dried by the time it has been carried through it. To keep up a proper circulation of hot air in the chamber, a "supplementary heating chamber" is connected with each compartment. Each chamber and compartment are provided with suitable means for introducing heat and for ventilating.

The gearing required for each apparatus is described although not claimed.

[Printed, 2*s*. 2*d*. Drawings.]

A.D. 1860, October 10.—No. 2461.

BARNETT, THOMAS. — "Improvements in machinery for "drying grain, roots, and seeds, and for roasting coffee, "cocoa, chicory, malt, and other vegetable substances." The machinery employed and claimed consists principally of a drum "mounted and revolving in bearings upon a frame or "moveable carriage," so that a portion of the drum may be carried into an opening in a furnace which contains "two-" "fire-places with their fronts or faces opposite to each other" and allowing "the half or some other portion of the drum to "be introduced between them."

"The breadth of the drum is much less than its diameter" and gradually diminishes from the middle, "so that the ends "may be two obtuse cones;" its periphery consists of "a "metallic plate or flanche, to the sides or edges of which all "around are attached pieces of wire cloth or perforated plates." Inside the drum are fixed arms, half of the number "across the "semidiameter of the drum at one end," and the other half across the semidiameter at the opposite end, "so as to act "alternately" upon the coffee, &c. within the drum. In the periphery is a door or slide for admitting and discharging the coffee, &c. The drum is mounted so that one half (or nearly so) of it projects "beyond the open end of the frame." By preference the frame travels on flanged wheels on rails which are supported on standards or attached to the brickwork of the furnace. By preference also the fronts of the fireplaces are "placed at the same angles to each other as the sloping ends "or sides of the drum."

[Printed, 10*d*. Drawings.]

A.D. 1860, November 3.—No. 2698.

PILLINER, Richard Burgess.—"Improvements in machinery "for compressing black lead or other suitable substances, "part of which improvements are also applicable to packing "various other materials," such as coffee, spice, flour, &c.

This machinery comprises "a self-acting feed" for measuring the quantity to be compressed at a time and "an arrangement "for making a pause in compressing the cakes in order to "release the confined air" when the plunger "descends into "the mould box at a quick speed."

The various motions are produced by the revolutions of a horizontal shaft with suitably shaped cams fixed on opposite sides of "a tangent or worm wheel" thereon. The wheel receives motion from a "single threaded worm" on the driving shaft. On one end of the horizontal shaft is "a short crank "which moves the plunger up and down in a guide." "A "lower slider" moves up and down in a frame under the mould box, being actuated by one end of a lever, the other end of which is connected to the cam on the outer side of the wheel. The "feed slide" is drawn to and fro by being connected to the cam on the inner side of the wheel; in its lower side is "a small slider," which forms "a bottom to the cavity "for containing a charge." The small slider moves with the feed slide until a pin comes into contact with a guide or with "the inside" of one of the standards of the machine, "when "it remains stationary whilst the feed slide is moved forward "with a charge or is withdrawn until its cavity comes under "the hopper to be refilled." Inside the hopper "a light "agitator" touches the top of the feed slide "for the purpose of ensuring it being filled;" and at the bottom is a slide "having an opening to permit the material to fall into "the feed slide."

To effect the pause, "a slight depression is made in the "lower face of the horizontal slot of the top plunger, which "allows it to remain stationary for a short time."

When the plunger is drawn up, the lever forces up the lower slider, thereby pushing the cake out of the mould box; and the front end of the feed slide, advancing with a fresh charge, thrusts the cake out of the machine.

[Printed, 8*d*. Drawing.]

A.D. 1860, December 22.— No. 3151.

SAVAGE, ALFRED. — "Improved apparatus for separating, "reducing in size, and mixing articles of grocery." This invention relates to certain improvements in the machine "known as Savage's noiseless machine" for sifting tea and cutting the large leaves at the same time, for dressing currants, and for chopping loaf sugar, &c.

As regards tea, a portion or the whole of the periphery of the vessel holding the tea is covered with woven wire, "so "that it may act as a sieve" whilst mixing the remaining portions. The vessel itself is "a hexagonal prism;" a slower motion is communicated to it by toothed wheels, the smaller being affixed to the driving shaft, and the larger to the vessel; guides, rising "as high as the top surface" of the machine, prevent the contents of the vessel "from being projected over "such guides;" the frame or case which supports the vessel is made "with openings at one or both sides," so that the drawer or receiver may be taken out at the sides; and "the "knife or knives and the roller or rollers" employed in cutting the coarse leaves are made "separable from each "other" when the part of the machine which carries them "is constructed according to Hebert's patent."

[Printed, 4*d*. Woodcut.]

1861.

A.D. 1861, January 30.—No. 252.

JOHNSON, John Henry. — (*A communication from Louis Henry Obert and Jean Baptiste Vasseur.*)—(*Provisional protection only.*)—"Improvements in the treatment of vegetable sub-"stances, and in the preparation of beverages therefrom." The inventors propose to dry, roast, and reduce to powder "the "various parts of all kinds of plants, trees, and shrubs con-"taining tannin or a bitter principle." The powder may be used either alone or mixed with tea, coffee, or other similar substances. "The best products" have been obtained from the alder, the oak, and the chesnut.

[Printed, 4*d*. No Drawings.]

A.D. 1861, January 31.—No. 259.

JOHNSON, John Henry. — (*A communication from Robert Harper.*) — "Improvements in machinery or apparatus for "roasting coffee and other seeds and roots, and for drying "grain." A roasting cylinder "is arranged in an angular "position with its open end directed upwards and towards "the back" of a furnace. A shaft passes longitudinally through the cylinder, and radial arms on the shaft are connected to an open frame which is covered with wire gauze; by this arrangement an inner cylinder is formed, "an important "feature in this invention," and the coffee is kept from contact with the heated metal of the roaster. Above the furnace is a "long rocking lever;" at its front end "is a "weight and graduated scale," by the regulation of which "the cylinder is kept in a state of equilibrium;" bearing upon the back end is a hook "which is kept in that position by "a weighted lever, it being adjusted to the ascertained weight

" of the moisture in the coffee under operation." The rocking lever moves upon a knife edge "similar to a scale beam." The shaft of the roaster is rotated by bevel gearing connected to one end, and it is united at the other end by a link to the rocking lever. A metal plate is placed over the roaster and the brickwork of the furnace "to retain the heat therein." The angle at which it is preferred to set the roaster is from 20° to 30°.

When the "predetermined amount of moisture" has been driven out, the weight at the end of the lever "overcomes the " pressure of the hook," and the closed end of the roaster is raised "by the descent of the weighted arm of the lever" so as to be higher than the open end, and consequently the roasted coffee falls out into a shoot.

[Printed, 10*d*. Drawing.]

A.D. 1861, March 7.—No. 577.

PIDDING, William.—(*Provisional protection only.*)—"Improvements in preserving the aroma and other properties of " coffee and cocoa from the effects of the atmosphere." If the coffee, &c. is ground, it is moulded with pressure into any desired form, and the packets are immersed into "a solution " of gelatine having in it alcohol or methylated spirits of " wine in quantity sufficient, after the evaporation of the " liquid forming the solution to render it insoluble in cold " water." The solution surrounding the packets is evaporated to dryness, and the process is repeated if required. Cases made of sheets of prepared gelatine, or of collodion, or of metallic foil or paper coated or lined with the gelatine, may be used; sometimes the cases are made of pieces of waste glass; the edges of all the cases are cemented with gelatine.

If the coffee is to be preserved in the berry, wrappers or cases of any of the before-mentioned materials may be used; they are previously immersed in the solution of gelatine and allowed to dry; when filled they are hermetically closed with the solution and "the addition of oil and lime water."

[Printed, 4*d*. No Drawings.]

A.D. 1861, March 21.—No. 708.

FRANKS, James.—"An improved mixture and preparation " of teas." For black tea the mixture consists of seven-sixteenths of souchong, one-sixteenth of flowery pekoe, seven-sixteenths of strong black leaf congou, and one-sixteenth of Assam; for green tea, two-thirds of the finest picked gunpowder and one-third of the buds of cowslip hyson.

The teas, when well mixed, are placed in bulk between two smooth and highly polished plates and are subjected to as much pressure as can be applied without injury to the leaf. This process (in a chamber kept up to a temperature of 60°) is continued for 7 days. The mixture is then removed to a dry room heated to 80°, is spread on a flat surface and turned over from time to time during 12 hours; after this, it is passed through an ordinary tea mill, and the unripe and inferior leaves are picked out. Finally, the mixed tea is put into tins hermetically sealed and is packed away for from 4 to 6 months in a dry room heated to 90°.

[Printed, 4*d*. No Drawings.]

A.D. 1861, June 12.—No. 1513.

GIRARD, Jean Pierre.—(*Provisional protection only.*)—" An " improved coffee mill," which " can be moved without " difficulty from one place to another."

The mill is fixed on a box, which has a drawer for the reception of the coffee when ground and an upright board which forms the back of the apparatus. A toothed grinder of cast iron is secured to the board by bolts or pins and nuts; it is turned by a handle and is in gear with the teeth of an iron core. The mill is regulated with a thumbscrew, and the teeth of the grinder and those of the core are so arranged " as never " to rub against each other." The coffee descends into the mill from a funnel-shaped hopper.

[Printed, 4*d*. No Drawings.]

A.D. 1861, August 2.—No. 1922.

NEWTON, William Edward.—(*A communication from Amasa Howe.*)—" Improved machinery for cleaning rice, coffee, and " other grains or seeds," that is to say, for " removing the " cuticle that adheres thereto after the outer husk has been " taken away."

A shaft mounted in suitable bearings passes through the end plates of a cylinder, which is usually about 5 ft. long and 8 in. in diameter; one plate (at the feed end) is fixed, the other (at the discharge end) is moveable. A screw, about 4½ ft. long and about 2½ in. pitch, surrounds the shaft inside the cylinder; its head or upper portion fills the cylinder for about 4 in. in length, and is so arranged as to leave a space of about 6 in. between it and the fixed plate. The remainder of the screw is about 2 in. less in diameter than the head portion. The shaft extends about 20 in. through the moveable plate or head, " which is allowed to slide backward and forward on " the shaft but not to revolve with it." A spiral spring is placed on the shaft between the outside of the moveable plate and an adjustable nut and washer on the shaft. A hopper, placed 5 or 6 ft. above the apparatus, enters the cylinder in the space between the head of the screw and the fixed plate.

The screw revolving rapidly propels the grain through the cylinder, and the grain discharges itself by forcing the moveable end from the cylinder. The compression caused while passing through the cylinder and the friction produced by the agitation loosen and scour off the cuticle.

In another arrangement the moveable end and the spring are not required; to the discharge end is attached a tube gradually curving upwards and rising vertically sufficient to contain an amount of grain, " which will produce the " required compression of the charge in the cylinder." There is a small door in the pipe near its junction with the cylinder for discharging the grain (if required) without forcing it up the pipe.

[Printed, 8*d*. Drawing.]

A.D. 1861, September 2.—No. 2186.

MÜLLER, William.—" Improvements in apparatus for roast- " ing coffee, which improvements are also applicable to the " roasting of cocoa and other vegetable matters." This apparatus " is especially adapted for domestic use." A vessel, wherein the coffee, &c. to be roasted is placed, is provided with a handle for holding it over a fire or jets of gas and with a removable lid. Through the lid passes the upper end of an axle; the lower end is formed as a socket to embrace a pin which projects upwards from the bottom of the vessel. From the axle radiate arms, which keep the contents of the vessel in motion when the axle is rotated by a handle either fixed on or loose upon it outside the lid. Sometimes an additional handle is looped on to the working handle to keep the hand farther from the heat.

[Printed, 6*d*. Drawing.]

A.D. 1861, September 16—No. 2302.

GEDGE, William Edward.—(*A communication from Casimir Druart.*)—" Improved apparatus for drying grain," likewise for drying coffee, rice, and other produce. The apparatus " acts " without the aid of any mechanism " and " may be placed " between two floors or stories."

A "vertical column" supports at intervals a number of cones " each alternate one being reversed and forming a sort " of funnel." Under the column (which is perforated in various parts) is a fireplace, the chimney of which may pass (or not) up through the column. Above the cones is a hopper; other parts of the apparatus are (1) metal plates on the funnels " serving to confine the grain to its natural inclination or fall " when flowing;" (2) supports for the cones; (3) hot-air spaces above the fireplace; (4) an aperture for cold blast and openings for escape of heat; (5) a discharge shoot, thermometer, and door for " inspecting the progress of the grain;" (6) a cap which may be slid over the column down to the bottom of the hopper " when it is desired to retain the heat and there is no " grain in the hopper;" (7) a casing which encloses the apparatus.

When the grain is discharged through the shoot, it is " passed through a ventilator and cooled for some hours."

[Printed, 6*d*. Drawing.]

1862.

A.D. 1862, January 2.—No. 18.

GEDGE, William Edward.—(*A communication from Jean Louis Rivret-Justin.*) — (*Provisional protection only.*) — " Improved " apparatus for roasting coffee." A sphere of metal (to hold the coffee) is surrounded by a casing of like metal which has " a fixed and a moveable part." The fixed part has " a " sloping cut to permit the passage of the revolving sphere.

" the axle of which it will support and to which it will be " nearly concentric ;" and on this side it will be covered with " another casing slightly excentric to and forming part of the " first," a passage being left for the smoke which will " re- " descend between them and escape through a pipe joined " thereto." The moveable part can be lifted and turned back behind the fixed part " to give passage to the sphere " when it is desired to inspect or arrest the roasting." When the moveable part is raised, " a double rack will be brought " down to lift the shaft of the sphere, and a pinion will be " placed on each side and will tooth into the rack," so that on turning a crank the sphere will come out of its casing and be withdrawn from the action of the fire. Each rack is " edged " by a bar of iron extending slightly beyond the teeth," and the shaft " will roll on these bars." The racks are united by " a half circle of iron," and to this is fixed " another which " will turn on two pins or pivots, and of which the extremities " will rise slightly above the rack, and will each have a " small sloping cut or half elbow " wherein the shaft may lodge. When the shaft arrives near this point, " the half " circle will be made to turn " and will be held by a spring hook or catch. The apparatus is placed on a stand " circu- " lar at the back and square in front in order to give it " solidity on the side which would have a tendency to over- " turn when the sphere was full of coffee."

[Printed, 4*d*. No Drawings.]

A.D. 1862, January 9.—No. 63.

WILSON, David.—" Improvements in machinery for pulping " and preparing coffee." The pulping parts of this apparatus are two annular rubbing surfaces, the one rotating, the other (by preference) stationary and placed either above or below the rotating one; in the arrangement first described the fixed rubber is the upper one. The faces of the rubbers may be either flat and horizontal, or inclined, or one convex and the other concave; set screws adjust the distance between the surfaces, and the upper one " is constructed to rise in " case a stone is introduced." By changing the rubbers the apparatus may be used for " removing the parchment and " thin skin " from the berries after they have been pulped and dried.

The stationary rubber is fixed to the framing by bolts which act as uprights for supporting it. The rotating rubber is mounted on an upright shaft to which rotatory motion "is "communicated in any suitable manner." A hopper is fixed to the stationary rubber. Its bottom is a reversed cone fixed to and revolving with the rotating rubber. "The lower or "delivery part of the hopper is thus formed into an annular "passage corresponding in dimensions with the inner edges" of the rubbers.

The berries and water pass in from the hopper between the rubbers at their inner edges, are rubbed between the surfaces, pass out at their outer edges, and fall into a trough, "the "bottom of which inclines towards two inclined sieves." The sieves "have a constant shaking or vibrating motion "communicated to them by a cam on the upright shaft."

If the upper rubber rotates and the under one is stationary, the machine "is for the most part similarly arranged;" the upper parts of the hopper are fixed by uprights, screws, and nuts to the framing.

[Printed, 2*s.* 4*d.* Drawings.]

A.D. 1862, January 22.—No. 168.

LITTLE, Thomas, and LITTLE, John.—(*Provisional protection only.*)—"Improvements in apparatus for cooling coffee "berries." The apparatus is composed of a box, a cylinder of wirework rotating therein on a horizontal axle, and a fan. The box is made with a lid for access to the cylinder, and the cylinder with a slide or other opening for charging and emptying. The fan is placed at one end of the box, and the opposite end may be of wirework or otherwise open for the escape of the air. The cylinder has projecting ledges inside, so that the coffee is constantly rising or falling during its rotation; it is rotated by a winch handle; "this again gives "motion by toothed gear to an intermediate stud wheel, from "which a band imparts a multiplied motion to the fan." The coffee when cooled is emptied from the cylinder into a drawer in the lower part of the box through inclined shoots, and magnetic bars may be placed along the edges of the shoots "for the attraction of nails and their separation from the "coffee."

[Printed, 4*d.* No Drawings.]

A.D. 1862, January 23.—No. 174.

ROPES, William Hooper.—(*A communication from William Maxwell Greene.*)—" Improvements in machinery or apparatus " for cleaning coffee, rice, or any seed or grain having an " outer hull and inner pellicle." The improvements claimed are (1) the use of " rotatory, inclined, or curved blades, or " Archimedean screws;" (2) appliances for preventing the accumulation of the grain " beneath the bottom of the vertical " shaft or boss which carries the propellers;" (3) the use of one or more revolving scoops on the surface of the grain; (4) making the vessel which holds the coffee, &c. " wholly or " partially of stone;" (5) the application of a blast or blasts of air directed on or through the body of the coffee, &c.

The vessel may be of any convenient shape; it is made with a hinged bottom closed by any suitable fastening, and at the top are bearings wherein a vertical shaft revolves by any convenient mechanical contrivance. Blades, " similar to the " blades of a screw propeller," are secured to the lower end of the shaft. Immediately below the blades there is " an " expanded boss or bell-mouth" formed on the bottom of the vessel and extending " nearly up to the bottom of the vertical " shaft which revolves in close proximity thereto." A horizontal arm is keyed on to the shaft; it rotates just above the surface of the coffee, &c., and its outer end carries a curved scoop to level the surface. A blast of air is introduced through an air pipe which is provided with a stop-cock. The coffee, &c. is supplied through a hopper, and (when the apparatus is at work) as it descends, " it is diverted laterally " at the bottom of the vessel by the expanded boss."

Sometimes the expanded boss is attached to the bottom of the shaft and revolves with it; it extends downwards " so as " to be in close proximity to the bottom of the vessel."

Sometimes an Archimedean screw is substituted for the blades; it extends up the shaft to the level of the contents.

Sometimes " an **S**-shaped clearer" is used instead of the expanded boss.

[Printed, 10*d*. Drawing.]

A.D. 1862, June 25.—No. 1869.

TURNER, George.—" Improvements in mincing apparatus, " such improvements being also applicable to machines for "grinding coffee and spices." This invention consists in the application to such machines of "a moveable end plate for "forming a second bearing for the spindle." The barrel of the mill is composed of two castings hinged together, and the plate is held in place by two screws or pins, the one inserted in the upper and the other in the lower casting. The plate is provided with an opening for the exit of the material when minced or ground.

When the machine is intended for grinding coffee, the barrel is arranged "vertically," and it is made "conical interiorly "and with teeth upon it." The spindle (turned with a crank handle) has "the ordinary conical cutter" on it; its lower end rests on the end of a screw, which passes through the end plate and adjusts the distance between the teeth of the cutter and those in the barrel.

[Printed, 10*d*. Drawing.]

A.D. 1862, November 8.—No. 3022.

KENT, George, and GRIFFITHS, Edward Paige.—"Improvements in apparatus for reducing cocoa berries and "other vegetable and animal substances to powder or pulp, "and for mashing potatoes." The vessel which holds the berries, &c. is by preference cylindrical, although the form of the upper part may be varied; it is supported on legs. In the lower part of the vessel "there is formed a horizontal bottom "composed of angular blades;" their outer ends are fixed, and their inner ends are secured between the flange of a step (whereon an upright shaft rotates) and an under plate to which the step is fixed by a screw nut. The cutting edge of each blade slightly overlaps the back edge of the next blade, so that, when "the nibs or broken parts of the roasted cocoa" are driven round against the blades, they will be cut, and the fine cuttings or powder "will pass through between the spaces" where the cutting edges overlap the back edges of the neighbouring blades. On the shaft are fixed inclined projections; the lower surface of each comes into contact, or nearly so, with the cutting edges. The lower edges of the inclines "do not radiate from "the centre of the axis or shaft, but are at an angle to the "cutting edges;" hence, when the shaft rotates, the projections "will cause the nibs or separated parts of the cocoa "berries to be carried round by the inclines, and by them

" will be pressed against the cutting edges." The upper part of the shaft turns in a bearing carried by a frame consisting of three radial arms; these have hook-formed ends which pass under lugs at the upper edge of the vessel.

[Printed, 1*s*. 4*d*. Drawings.]

1863.

A.D. 1863, March 18.—No. 719.

SYMINGTON, William. — "Improvements in the process " of and apparatus used in roasting and treating coffee and " other organic substances." The object of this invention is to utilise "the aroma, volatile oil, and other products evolved " during the process of roasting coffee, cocoa, chicory, and " other substances."

The roasting cylinders "can be made either to communicate " with the open air or with one or more closed chambers or " vessels at pleasure." In these chambers cold roasted coffee, chicory, &c. ground or otherwise but in a dried state, is placed (by preference on shelves or trays), so that the aroma, &c. evolved during the roasting in the cylinders may pass over or through it. In order to absorb the whole of the aroma, &c., coffee previously roasted and become cold is put into the cylinders and allowed to remain with the hot roasted coffee for from 10 to 15 minutes. The products which are evolved during the early part of the roasting, "or until the " berry begins to change colour," are allowed to escape into the open air.

[Printed, 4*d*. No Drawings.]

A.D. 1863, April 17.—No. 964.

RILEY, Samuel.—(*Provisional protection only.*) — "Improve- " ments in the manufacture or preparation of cocoa and " chocolate." This preparation consists of nine sixteenth parts of cocoa, five sixteenth parts of coffee, and two sixteenth parts of taraxacum or chicory; the ingredients are ground separately and then together.

If a liquid preparation is required, the essences or extracts are mixed in the same proportions either by weight or measurement.

[Printed, 4*d*. No Drawings.]

A.D. 1863, April 30.—No. 1088.

RÉMOND, Alfred Henry.—(*Provisional protection only.*)—"An improved process for retaining the aroma of coffee and "cocoa." When the coffee berries are about half or three parts roasted, the cylinder is opened, and "a small quantity "of powdered sugar thrown in sufficient to absorb the aroma." The cylinder is then closed, and the roasting is completed. When the berries are sufficiently cool, they "are dipped in a "thin mucilage of gum or gelatine and dried immediately."

Cocoa nibs are treated in the same manner.

[Printed, 4*d*. No Drawings.]

A.D. 1863, September 1.—No. 2159.

CLARK, William.—(*A communication from Auguste Desgoffe and Achille Ollivier.*)—"Improvements in hydraulic apparatus." This invention is based on the principle of "the hydraulic "press;" a pump barrel, cylinder, or other suitable chamber, is "completely filled with water which is hermetically closed," and compression of the liquid is produced "by forcibly in- "troducing any suitable solid body."

In the apparatus represented in the annexed drawings a piston works in a cylinder "hermetically enclosing a liquid;" and two reels (or a series of reels) "serve for winding any solid "body, a wire or cord for example, for producing the com- "pression of the liquid." The position of the reels and the "mechanical arrangements for winding the compressing wire "may be varied."

The apparatus may be used for a variety of purposes, which are stated in the Specification, and amongst them is mentioned producing pressure in the manufacture of chocolate.

[Printed, 8*d*. Drawings.]

1864.

A.D. 1864, March 29.—No. 779.

NEWTON, William Edward.—(*A communication from James Henry Thompson and John Hedges Lidgerwood.*)—(*Provisional protection only.*)—"A new and improved machine for hulling

" grain" and coffee and other berries. In this machine "the " attrition produced by the rubbing of the grains in contact " with each other is depended upon for performing the work, " and not the direct contact of moving surfaces with the " grain."

The case which contains the huller and the grain or berries is conical in shape and "placed in an inverted position in the " framing." The huller is a vertical shaft carrying usually " three frustums" of cones varying in size, the largest being uppermost. The shaft rotates in a step and a bearing in a cross bar. The lower edge of each frustum corresponds nearly to the inner surface of the case, space being left for the passage of a single grain or berry between them. The lower end of each frustum is concentric with the case, "but their " upper parts do not form a perfect circle;" each has three projections at its upper end, and these "gradually lose them- " selves as they proceed downward and are entirely lost at " the bottom of each frustum, which is fluted spirally or " longitudinally." To the upper surface of the uppermost frustum a circular plate is attached; it fits into the upper part of the case and rotates within it.

The hulled material is discharged through openings at the bottom of the case, and the openings may be arranged "to " regulate the discharge" and thereby subject the material to the action of the huller for a longer or shorter time as circumstances may require.

[Printed, 4*d*. No Drawings.]

1865.

A.D. 1865, January 9.—No. 64.

JOHNSON, John Henry.—(*A communication from Nathanael Greene and Walter Clement Key.*)—"Improvements in ma- " chinery or apparatus for cleaning rice, coffee, and other " grains or seeds having an outer hull or inner pellicle." The attrition is produced by the action of "a screw bladed pro- " peller revolving near the bottom" of the vessel which contains the material, and the improvement consists in increasing "the area of effective rubbing surface" by roughening the surface of the rotating shaft of the propeller.

The improvement is effected in either of the following ways:—The metal shaft may have "file or rasp cuts thereon" or be otherwise roughened. The shaft may be made of stone or "other substance of a grinding or gritty nature." The shaft may be enclosed in a tubular collar or casing of stone or other grinding or gritty material extending from the propeller to the top (or nearly so) of the vessel; the inventors prefer this last arrangement.

[Printed, 6*d*. Drawing.]

A.D. 1865, April 6.—No. 979.

DIOSY, Martin.—(*A communication from Reni Charles Jules Prevet and Maximilian Louis Joseph Chollet.*) — (*Provisional protection only.*)—"A new or improved material to be used in "combination with or as a substitute for coffee." The material is "the locust bean or karouba." The husk of the bean is roasted and ground, "and when so prepared it "resembles coffee in appearance and taste."

[Printed, 4*d*. No Drawings.]

A.D. 1865, June 13.—No. 1594.

ROBINSON, Albert.—(*A communication from Thomas Waters.*) —"Improvements in the means and apparatus for firing and "curing tea." This invention relates to "the application of "the heat of steam instead of the direct heat of fire to the "firing and curing of tea."

The tea is introduced into one end of "a long trough of a "semicircular transverse sectional form." The trough (by preference of thin wrought iron) is surrounded by a steam jacket, and the jacket is enclosed in a wooden casing. A shaft carrying blades runs through the whole length of the trough; it is rotated by any suitable power. The blades are placed at a slight angle to the shaft; each is adjustable by means of an arm, a pin, and a perforated segment. At the back of each blade is a projecting bar, which as the blade revolves "is "made to pass very closely along the surface of the trough."

The tea travels gradually along the steam-heated surface of the trough; it is constantly stirred by the bars, and when it arrives at the farther end of the trough, "it is perfectly fired "or cured" and passes out into any suitable receptacle.

Instead of separate blades, "one continuous screw" may be fixed on the shaft; or an endless band "with projecting "surfaces" may be arranged to carry the tea slowly along the trough.

[Printed, 10*d*. Drawing.]

A.D. 1865, October 20.—No. 2703.

McGAVIN, ALLAN LAWRIE.—(*A communication from Benjamin Dickinson.*) — "Improvements in desiccating the leaves and "flowers of plants and other vegetable substances, and in the "apparatus to be employed therein." The object of this invention is "to perform that portion of the tea manufacture "known as the parching and colouring and firing or panning "processes" by means of a hot-air blast.

The apparatus is mounted on a frame which is supported on wheels. At one end of the framework is a case containing a cylinder wherein the tea is placed. Connected to the bottom of the case is a hopper, at the lower end of which is a pipe leading to a furnace or other heater. On the opposite side of the furnace is a pipe into which air is driven by means of a fan or other suitable contrivance. "A by-pass pipe" unites the two pipes, so that cold air may be admitted into the hot-air pipe.

The bottom of the case is a perforated plate, the top a moveable cover. The periphery of the cylinder is wire gauze or perforated metal. The admission of air and the combustion of fuel are regulated by throttle valves. An open framework may be mounted on the axle of the cylinder for agitating the contents. The machinery is worked by a gearing of bands and pulleys, and sometimes a small steam engine is added to work the fan and cylinder.

[Printed, 10*d*. Drawing.]

A.D. 1865, November 4.—No. 2855.

CAMPBELL, FREDERICK. — (*Provisional protection only.*) — "Improvements in treating or curing the tea leaf, and in "apparatus employed therein." The leaves green as "brought "from the garden" are placed on trays in an upper chamber, where they are heated by steam and hot air "preparatory to "rolling." They are then passed through the floor of the chamber into a machine of the following description:—On the upper part is a hopper, and in the bottom of the hopper is "a spiked or serrated roller or feeder" which draws down the leaves. The leaves pass between two rollers, the one of iron, the other of india-rubber, whereby "more suppleness" is imparted to them; they are then passed between "a concave iron plate" (to the back of which is attached a hot air or steam jacket) and a cylinder covered with vulcanized india-rubber.

The leaves, being now "completely rolled," are discharged into an iron pan heated by hot air or steam. "Bamboo trays" then receive the leaves, and "what is termed the first firing" is effected by placing the trays "over cells heated by steam "and hot air." The leaves are now sorted, and "the final "firing previous to packing" is given to them on trays in a room heated by hot air or steam.

[Printed, 4*d*. No Drawings.]

A.D. 1865, November 16.—No. 2950.

NEWTON, Alfred Vincent.—(*A communication from Thaddeus Hyatt.*)—"An improved manufacture of caramel." This substance, "better known by the name of 'burnt sugar,' though "generally made from molasses," if provided with "a dry base "of its own which reduces it to a powdery condition and "protects it from the air," may be "mixed with coffee at any "moment," and the coffee "need not be ground until wanted "for use."

The following is the mode of treatment preferred:—"With "bran for a base," dissolve 5 lbs. of molasses in hot water sufficient to thoroughly soak 10 lbs. of bran; dry the bran when saturated, and roast it to a chocolate colour.

If the base is to be dry bread, reduce the bread to a coarse powder and treat it "in a similar way."

If flour is to be used as the base, make the flour into bread, "using molasses in the same proportion as with bran and "mixing it into the dough;" bake the bread, dry it, reduce it to a coarse powder, and roast it.

[Printed, 4*d*. No Drawings.]

A.D. 1865, November 16.—No. 2951.

NEWTON, Alfred Vincent.—(*A communication from Thaddeus Hyatt.*)—" An improvement in the roasting of coffee." The inventor claims " the preparation of oil developed coffee," asserting that the oil of the coffee should not be lost in the roasting, and " that the aroma of the coffee is developed step " by step with this very oil."

He effects his object " by properly proportioning the volume " of hot air to the mass of the coffee in the drum," and the mass should not exceed " one-fifth the quantity ordinarily " roasted at a time." When coffee is thus roasted, it soon begins " to give a report or crackling," and the roasting is completed " when a simultaneous explosion takes place." The coffee must then be taken quickly from the cylinder and be spread out to cool, " as it is now thoroughly covered with " oil."

[Printed, 4*d*. No Drawings.]

A.D. 1865, December 6.—No. 3133.

WHELE, Edwin.—" An improved machine for dressing, " sifting, cleaning, and polishing fruit, coffee, grain and " other matter, parts of which are applicable to coffee sifting, " roasting, cooling, and cleaning, and other purposes." This machine is composed principally of " a rotating sieve or cylin- " der of the proper mesh to suit the fruit or matter to be " dressed or acted upon " and a partition inside " dividing " the cylinder but not rotating with it."

The wires of the cylinder " should run in a coil round the " cylinder and be laced to cross bars or wires " which pass through iron plates forming the ends. The cylinder is mounted in an iron frame; its axle consists of two parts; the part to which the handle is attached rotates; the other part is fixed and the cylinder revolves round it. The fixed part carries the partition, which is of such size that the cylinder can revolve round it. A brush may be placed on the top of the partition. In the cylinder is " a trap door opening out- " wardly."

The size of the mesh may be regulated by means of a similar inner cylinder which slides in the outer one. Both cylinders may be made of metal " perforated with diamond-shaped " holes."

When the cylinder is rotated rapidly, the fruit coming into contact with the partition "will fall down in a shower, "rouncing and polishing itself by its own friction;" the husks, &c. "will pass out by the centrifugal force imparted by "the action of the machine."

The patentee claims "the moveable mesh" and the fixed partition for "sifting" coffee, tea, &c., and for "cooling" coffee; for roasting coffee he claims the fixed partition placed inside the usual roasting cylinder.

[Printed, 6*d*. Drawing.]

A.D. 1865, December 14.—No. 3239.

MILLER, Henry William.—"Improvements in apparatus for "screening grain, seed, rice, tea, and other materials." The screens or sieves employed in this apparatus are made with "perforated surfaces which have corrugations or undulations "formed across them transversely of the direction" wherein the tea or other substance is caused to travel over the screening surface. Usually three screens are used; the perforations "should be circular." Wirework screens may be used, "but "they are not so good;" perforated zinc is preferred. The screens are mounted in a sliding frame one above the other, and each being laid in a recess in the frame, the apparatus may be used "with one, two, or three screens" as desirable.

The frame receives a to and fro motion by means of a connecting rod linking it with a crank on an axle, and the axle is turned by means of a pinion, spur wheel, and handle. Near the outer end of the frame is "a tie bar for steadying the "head of the frame on which the hopper is fixed." The tea, &c. descends from the hopper through an opening, which is regulated by a slide actuated by a hand lever or quadrant.

The frame and screens being in a slanting position, the unbroken tea, &c. "for the most part escapes and runs off at the "lower end" of the uppermost screen, and the broken "rapidly passes through;" by the time that the tea, &c. has undergone the action of each screen, the broken will be effectually separated from the whole.

[Printed, 1*s*. 2*d*. Drawings.]

1866.

A.D. 1866, January 15.—No. 131.

CAMPBELL, FREDERICK, and BURGESS, WILLIAM.—"Improvements in apparatus to be employed in treating and "curing the tea leaf." The leaves "as gathered in the garden" are placed on trays heated by steam or hot air; by this treatment the leaves are "quickly withered and rendered "into a suitable condition for the rolling process."

The principal parts of the rolling apparatus are (1) a revolving cylinder covered with an elastic flexible substance; (2) a flexible elastic stationary surface adjustable as to its distance from the cylinder; (3) an inclined table down which the leaves are brought into contact with the cylinder. The most suitable flexible substance is vulcanized india-rubber. The required pressure between the cylinder and the stationary surface is obtained by a weighted bar at the lower end of the latter. The table "is arranged to move up and down and to shake "the leaves" downwards to the cylinder.

The leaves descend from between the cylinder and the surface into a tray heated by steam or hot air, and from this they are moved on to bamboo trays, which are placed over cells heated by steam, hot air, or charcoal.

[Printed, 6*d*. Drawing.]

A.D. 1866, January 20.—No. 189.

GEDGE, WILLIAM EDWARD.—(*A communication from Felix Boutellas-Desmoulins.*)—"Improved preparations of the plant "known as the coca, to permit its incorporation with confectionary of all kinds," among which is mentioned "chocolate of any form and of any nature."

Either of the following modes of preparation may be adopted: —Infuse the cocoa during three weeks in alcohol at 85° by "'Baumé's' areometer" (one part cocoa and seven parts alcohol); or infuse the cocoa in water, one part cocoa and 10 parts water; or filter the infusions "in a displacing apparatus;" or distil the infusions in an alembic.

"Incorporate this extract, either liquid or solidified, and in "variable doses," with the chocolate.

[Printed, 4*d*. No Drawings.]

A.D. 1866, February 20.—No. 527.

CHILDS, Augustus Bryant.—(*A communication from Abner Baker.*) — " An improved automatic apparatus for roasting " coffee and other substances." The sides of the roasting cylinder are of wirework or metal openwork, so that the husks of the berries fall through during the rotation of the cylinder; the ends are of tin or other metal, and one is removable. A case of reflecting material " completely covers " all but the under portion of the said cylinder when placed " thereon," thus serving as " a reflector " and " a condenser " to prevent the escape of the aroma." The cylinder rotates by an arrangement of clockwork, and two coiled springs are by preference used, so that the apparatus can be made to work for a longer time, as each " can be wound up while the " other is keeping the apparatus in motion." A fan in gear with the clockwork causes a continuous supply of fresh air to the working parts. The clockwork is enclosed in a metallic or other case having in it apertures to allow a current of air to pass through; it is further protected from the heat by a metallic shield fixed at the lower part of the case.

[Printed, 4*d*. No Drawings.]

A.D. 1866, March 7.—No. 690.

DAVIS, Henry Francis.—(*Provisional protection only.*)—" A " new chemical process for manufacturing artificial tea." Bichromate of potash is decomposed with concentrated sulphuric acid; " two equivalents " of pure chromic acid and " one " equivalent " of ammonia are then added; the solution is evaporated, and the salt is subsequently separated. The salt thus obtained, when ignited at a low heat in a metal dish over the flame of a candle or a jet of gas, continues to burn; " every particle of the salt is decomposed, and the residuum " forms an exact resemblance to tea."

The inventor, in carrying out his invention adds 5 parts by measure of concentrated sulphuric acid to 4 parts by measure of cold saturated solution of bichromate of potash; he semi-saturates the chromic acid with solution of ammonia; when the whole is mixed together, he evaporates and crystallizes.

[Printed, 4*d*. No Drawings.]

A.D. 1866, June 28.—No. 1724.

JOHNSON, John Henry.—(*A communication from Eugène Pierre Barrabé.*)—"Improvements in machinery or apparatus "for cleaning and decorticating pulse, grain, and seeds." This invention is an improvement on the one for which Mr. Johnson obtained Letters Patent dated 24th December 1861, No. 3214. In the present invention the upper surface of the rotating truncated cones and the under surface of the intermediate or stationary ones are roughened; the cylinder also, which holds the cones and the substance to be acted on, is lined with roughened plates or has teeth or sharp points formed on its inside. The apparatus is now applicable to cleansing and decorticating "coffee berries, cocoa nibs," &c.

The cylinder is fitted inside a wooden frame; it is composed of rings "held tightly one on the other and having in the "interior of each a stationary truncated cone." Each cone has a circular opening in the truncated portion for the passage of a vertical shaft which carries a series of cones "placed "exactly in the intervals" between the fixed cones. All the cones are inverted. The space between the edges of the rotating cones and the cylinder is "gradually contracted from "the top to the bottom."

The berries, &c. descend from a hopper into the first of the rotating cones; they pass down "alternately between two "roughened surfaces and two smooth ones;" and as they issue from the bottom through an inclined spout, they are subjected to the action of a fan which drives away the dust, refuse, husks, &c.

In order to vary the speed of rotation of the cones "without "necessarily varying the speed of the driving shaft," it is proposed to drive the vertical shaft "by friction from the "vertical face of a disc" carried by the driving shaft; the disc is held against a pulley on the vertical shaft by an adjustable spring.

The Specification contains a description of "a slightly "modified form" of apparatus which may be used either "as a decorticator or as a pulveriser:"—The rotating cones are attached to a collar on the vertical shaft, and the shaft can be raised to adjust the distance between the rotating and the fixed cones. Underneath the fixed cones rings are secured which "retard the ascending movement" of the substance. The hopper is placed inside the cylinder. A "central collar, which is made in one with the hopper," encloses a sleeve whereby the rotating cones are kept in place.

[Printed, 1s. Drawing.]

A.D. 1866, July 2.—No. 1756.

HODD, Stephen Allen, and UPTON, William.—(*Provisional protection only.*)—"Improvements in apparatus for roasting "coffee." This apparatus is "most suitable for private "houses." The roasting cylinder revolves on an axle which is set in motion "by a spring and train of wheels or it may "be a weight;" it is enclosed in a stationary cylinder, and a gas jet is provided below. In connection with the train of wheels is "an apparatus communicating at the proper time "with the tap regulating the supply of gas;" this is set according to the time required to roast the coffee, and when such time has expired, the gas is turned off by the self-acting action of the apparatus. "It is arranged that the cylinder "shall be kept revolving some time after the gas is turned "off" to effect the proper cooling of the coffee. The roasting cylinder is made to slide out of the outer one.

[Printed 4*d*. No Drawings.]

A.D. 1866, July 17.—No. 1861.

THOMPSON, William.—"Improvements in machinery or "apparatus for mixing and re-packing tea, also applicable to "the mixing of other granular substances." This invention consists of a combined apparatus for first mixing and then repacking tea; either apparatus may be used separately.

Either of the following arrangements answers for mixing:—(1) A closed drum revolves on a central shaft; it has an aperture for filling and emptying on its circumference, and inside are sieves "arranged in radial positions." The sieves slide in and out in grooves formed in the sides, "being introduced "through slits in the circumference." The lower part of the drum works in a case, into which the tea falls when properly mixed by the revolution of the drum and the consequent falling through the meshes of the sieves. The mixed tea falls through an aperture in the case into chests.

(2) Inside a case an endless band revolves "over two poly-"gonal rollers;" the edges of the band fit closely against the

flat sides of the case, and to the band are fixed sieves at right angles thereto. The tea is introduced through a hopper at the top of the case. The lower roller being caused to revolve, the sieves travel up one side of the case and down the other, and the tea is finally discharged through an opening in the bottom of the case.

The repacking part of the apparatus consists of a piston or plate actuated by a screw spindle and fitting the inside of the chest. The sides of the chest are supported against pressure by means of bars or frames, tie rods, and thumbscrews.

[Printed, 8*d*. Drawing.]

A.D. 1866, August 24.—No. 2177.

POYSER, Josiah Thomas.—"Improvements in machinery or " apparatus employed in dressing, screening, and separating " grain, and for other similar purposes." This apparatus is applicable to the screening and separating of "tea and " other similar articles ; " it is described in its application to the dressing, &c. of grain generally. As tea however does not require to undergo so continued a treatment as grain, a short description of the apparatus will be sufficient for the present series.

The frame can be readily taken to pieces for convenience of packing ; it consists of a pair of standards at the front end and another pair at the back ; these are connected laterally by rails, &c., and the sides form bearings for parts of the machinery. An inclined "troughed frame" carries several perforated plates " having transverse bars or rollers on the upper " side ; " the grain passes over these ; the refuse, &c. becomes gradually separated and falls into receptacles provided for it. Some of the plates "have a longitudinal and also a " transverse motion " communicated to them by hinged rods or other appliances. The supply from a hopper on the upper side of the apparatus is regulated "by means of a rack and " quadrant on the back " thereof. A fan or blower is set in motion by means of toothed wheels on the fly wheel shaft.

[Printed, 3*s*. Drawings.]

A.D. 1866, August 30.—No. 2242.

NEWTON, William Edward.—(*A communication from William Van Vleek Lidgerwood.*)—" Improvements in machinery for "hulling and cleaning coffee and other berries or seeds." This inventon is an improvement "in machinery of the general "character shown in letters patent" granted to Mr. R. P. Walker on May 15th 1857, No. 1374.

A "shaking screen" is introduced into the hopper; its meshes allow the berries to pass through but detain foreign substances larger than the berries. A frame is "enclosed to "keep in the dust;" within it is a horizontal shaft carrying a prism of about eight sides and rotated in one direction; and round the shaft is a cylindrical casing rotated in the other direction; the berries pass in between the prism and the casing. Small stones, &c. are broken up, when they enter the machine, by lining the casing at the feeding end with corrugated plates and by making the prism at the same part "in a "series of decreasing polygons or prisms, on the surface of "which are bolted chilled cast-iron plates." The berries are hulled by the action of plates formed with rasping teeth and set in stocks on the surfaces of the prism beyond the chilled plates; and this portion of the cylinder is made of wire grating "formed of square iron bars interwoven," so that dust, grit, &c. may pass into the frame. Short "flanges or flights," attached to the prism at one end and at the other to an adjustable bar, "cause the hulls and coffee to progress regularly" through the machine.

After the separation of the hulls and the rubbing off of the skin, the mass is discharged from the machine and "passed to "the fanning mill." This mill has "two revolving fan "blowers placed one above the other," and the blasts from them pass through a space "formed between two enclosing "frames." The upper blast is directed upwards by an inclined board and acts on the mass as it descends from a hopper. The hulls are blown away, and the "light" berries are blown up over the edge of the inclined board into a receptacle. The other berries and any remaining hulls descend from the lower edge of the board "upon the top screen of a series of screens "that are set in a framework closed at the sides and forming a "shoe" which vibrates. The lower blast passes through the shoe and is regulated by an adjustable blast board. The position, inclination, and size of the meshes of the screens, are described in the Specification; one has "long narrow meshes "to pass the berries flatwise." Under the upper screens are

" small hammers" faced with india-rubber or leather; these " give them a jar that loosens any berries" wedged in the screen.

[Printed, 1*s*. 4*d*. Drawings.]

A.D. 1866, November 10.—No. 2928.

BONNEVILLE, Henri Adrien.—(*A communication from Albert Angell, Henry Truman Bostwick Hayes, and Andrew McKenney.*) —" Improvements in coffee hullers." This invention comprises machines for " pulping, hulling, cleaning, and polishing " coffee." In each machine a serrated or roughened or corrugated cylinder revolves against a stationary hollow or trough-like segment which partly encircles it. In the hulling machine " a series of serrated spring cams or strippers" are arranged within the segment, and in the polishing machine the segment is furnished with " a series of spring brushes." The strippers are secured each at one end to the inner circumference of the segment, and the other end, which is serrated or roughened, comes near to or in contact with the periphery of the cylinder. The segment is adjustable as to distance from the cylinder. The brushes (secured in like manner to the segment) consist (by preference) of wire cloth or wire fastened to elastic stocks.

The machines are arranged side by side with " an elevator" between them. Under each machine are a fan and a screen. The whole " may be variously constructed so far as its frame, " gearing, fans, screens, or sieves, and other details are " concerned."

The coffee passes from a hopper between the segment and cylinder of the huller; is subjected to their action; whilst falling from between them it receives the blast created by the fan; when sifted it is raised by the buckets of the elevator into a hopper at the top of the polisher, and descends thence between the cylinder and the brushes.

[Printed, 8*d*. Drawing.]

A.D. 1866, November 28.—No. 3131.

PIDDING, William.—(*Complete Specification but no Letters Patent.*)—" An improved method or methods of treating coffee " and tea for general uses," so as to preserve the aroma thereof.

1. Coffee :—The berries (green or unroasted) are cut up into small particles or grains by means of indented or recessed rollers. The grains are dried, roasted, pressed (with or without humid heat as may be necessary) into cakes or balls, coated with gelatinous matter, and heated sufficiently to harden them. Sometimes gelatinous matter in a dry state or in powder or in solution is mixed with the granulated coffee, and the mixture is pressed (with humid heat) into cakes or balls. Ordinarily ground coffee may be treated in like manner. Chicory may be mixed with the coffee.

2. Tea :—The leaves are deprived of brittleness by slight humidity; sometimes an infusion of the leaves of the black currant tree is used for such purpose; they are then pressed and coated precisely as before described.

[Printed, 4*d*. No Drawings.]

A.D. 1866, December 22.—No. 3377.

AYRE, ALGERNON SYDNEY and AYRE, HORATIO HARRIMAN.—“ Improvements in means or apparatus for drying wheat, “ barley, rice, and other grain, which improvements are also “ applicable to the drying of seeds, coffee, and other matters.” The object of this invention is to effect the drying without exposing the matters “ to the fumes of sulphur.”

The apparatus claimed is of the following description, although “the precise details and arrangement” may be varied :—A cylindrical casing surrounds a cylinder, space being left between them for the admission of steam. The ends of the casing are closed; one end is “ affixed to and re-“ volves with the cylinder; it has an opening for the reception “ of the lower end of a hopper, and the opening is large “ enough” to admit of the escape of the damp air arising from the drying of the “ matters in the cylinder.” The other end of the casing is stationary; it has two openings, the one for the exit of the matters from the cylinder, the other for a pipe from a fan, “ by which the damp air may be driven from “ the interior of the cylinder.” The axle of the cylinder is hollow and is connected to it by hollow arms at each end “ for “ the passage of the steam to and from the outer casing.” Round the axle is a spiral band, and between the spirals are “ steps to assist the turning over of the matters in the “ cylinder.” The apparatus, when mounted in bearings is slightly inclined to facilitate the escape of any condensed water " by means of self-acting spring valves " in the casing.

[Printed, 8*d*. Drawing.]

A.D. 1866, December 29.—No. 3422.

SLATTER, JOSEPH.—(*Provisional protection only.*)—" An improved screen or sifter for screening cinders, corn, tea, " sugar, gravel, malt, and other granular substances." A long casing of any suitable shape and material is fixed in an inclined position at such a distance from the floor that receptacles may be placed under for the reception of the substances after passing through the casing. On the top of the upper end (otherwise closed) is a hopper; inside is a screen of perforated metal or wire gauze, and " an aperture on a level with the " upper surface of the screen, so that the granular substances " passing down upon the latter will pass out through such " aperture." The lower end of the casing is closed, but it has two apertures, namely the one above-mentioned (called by the inventor " the end aperture ") and another provided with a spout, through which the dust, &c. passing through the screen falls. The tea, &c. is caught in one receptacle, the dust in another.

[Printed, 4*d*. No Drawing.]

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IV.

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